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C O U R S E
O F
E X P E R I M E N T A L
A G R I C U L T U R E.
V O L. I.

Young (A.)

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C O U R S E
O F
E X P E R I M E N T A L
A G R I C U L T U R E :

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IN TWO VOLUMES.

VOL. I.

L O N D O N,

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M.DCC.LXX.

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J. Watson del.

C. Grignon sculp.

TO THE MOST HONOURABLE
THOMAS WATSON WENTWORTH,
 MARQUIS OF ROCKINGHAM,
 EARL OF MALTON,
 VISCOUNT HIGHAM OF HIGHAM FERRERS;
 BARON ROCKINGHAM OF ROCKINGHAM;
 BARON OF MALTON, OF WAITH, AND HARROWDEN;
 LORD LIEUTENANT AND CUSTOS-ROTULORUM OF THE
 WEST-RIDING OF THE COUNTY OF YORK,
 AND CUSTOS-ROTULORUM OF
 THE NORTH-RIDING OF THE SAME;

KNIGHT OF THE MOST NOBLE ORDER OF THE GARTER;
AND ONE OF
HIS MAJESTY'S MOST HONOURABLE
PRIVY-COUNCIL.

MY LORD,

I DESIRE leave to present to your Lordship this register of Experimental Husbandry, rather as a testimony of my veneration for so good and great a Patron of Agriculture, than as an offering worthy of your Lordship's acceptance.

Humble as my occupation is, your Lordship has deigned to make it the object of your attention: I ought therefore to be apprehensive of your experience, which will so well enable you to point out
my

my errors; but I trust to your candour and humanity for that favourable reception of my work, which every one is sure to meet with from your Lordship, who, in any way, endeavours to serve his country.

I am,

My Lord,

Your Lordship's

most obedient and

devoted Servant,

ARTHUR YOUNG.

my friend, but I am not
at all sure of the
which is the only one

of the whole

of the whole

of the whole

of the whole

of the whole

P R E F A C E.

I Venture this register of my experience to the public eye, with that diffidence which is ever felt by those who have formed a clear idea of perfection, but endeavoured in vain to reach it. I entered upon the following experiments with an ardent hope of reducing every doubtful point to certainty; and I finished them with the chagrin of but poorly answering my own expectations. Where I imagined two or three trials would have proved decisive, forty have been conducted in vain. I began with sketching experiments, in consequence of having reasoned on the probable event; but a very little experience convinced me that experiment must precede reasoning; and that, in agriculture, it is somewhat necessary to act before we think. As much as the experimental part of husbandry occupied my attention even at setting out; yet I omitted the first year a multitude of minutes, which I have regretted since; many the second year, and not a few even to the last: but the series that ought to be carried on regularly are boundless; and every year of a man's practice will open new worlds of enquiry.

Had matters foreign to agriculture permitted me to have continued my experiments on the same land, I should not have published this course of many years; for every one would have convinced me of the expediency of connecting in one chain a long series of trials, that determinate conclusions might at last have been the result; but a change of soil to one totally different, has quite broken the connexion between the experiments I carried on in Suffolk, and those I am preparing for in Hertfordshire. Thus am I involuntarily led to make a pause in my inquiries, almost at their very beginning; and, after having formed the pleasing hope of being able to lay before the publick a work fraught with decisive conclusions, the result of many years experience, I blush at the imperfections of the present sketch, which is but the outline of what I wished to perform.

Let me, however, in palliation of the acknowledged fault of publishing a work whose imperfections I am conscious of, venture to assure the candid reader, that he may depend upon the accuracy of all I have inserted in this course. My attention to form a register minutely genuine has been so great, that some experiments are inserted, from which scarce any conclusions can be drawn; owing to unlucky accidents, or other causes. I did not reject them, that my book might be the real transcript of my practice, and not a partial representation of experiments, picked and culled to serve the purposes of a favourite idea, or upon which to found a brilliant hypothesis. In numerous instances, I have been a very bad farmer, and acted contrary to the dictates of good husbandry; but my faults are registered, and I hope condemned impartially.

The general principle upon which I began and continued this course of experiments, was to keep minutes of every thing; and though the many omissions of the two first years were somewhat inconsistent with that design, yet I was afterwards more attentive, and omitted fewer memorandums which were requisite for the drawing up the experiments I wanted to register. I was never absent from the farm, even a single week, without leaving a bailiff I could fully trust, who gave me, on my return, every particular I demanded in writing, by which means my journals were complete; nor did my horses, men, or implements, perform the most trifling work without its being minuted; nor was a penny expended for any purpose without being carried to the account. I do not mention these particulars as proofs of an extraordinary or commendable attention; but merely the absolute requisites and foundation of experiments, without which it would have been impossible to register them with the least accuracy.

The many volumes upon agriculture which I have turned over, guarded me against a too common delusion, and ever fatal in an inquiry after truth; the adopting a favourite notion, and forming experiments with an eye to confirm it. There is scarcely a modern book on agriculture, but carries marks of this unhappy vanity in the author, which must render its authority doubtful to every sensible reader. The design of perusing such works, was to find practical and experimental directions in doubtful points; and my disappointment gave me a disgust at favourite hypotheses. And as I embraced agriculture not as an amusement, but a business, and with a fortune that would not allow me to be indifferent about profit, especially in every thing carried on *in large*, I sought after TRUTH, and tried a number of experiments merely to discover her; totally indifferent on which side I found her, and solicitous only to be convinced of the most profitable methods, in order to pursue them as worthy objects of my attention. The reader, after he has perused the ensuing pages, will easily credit these assertions; for he will find it very difficult to discover the least trace of a prejudice for or against any object throughout the work. He will no where find a connected train of experiments invariably successful enough to create suspicions.

It is of little consequence to the world to be told the authors of the generality of books. Merit is independent of reputation. If a work is good it may be applauded, if bad condemned, without the least necessity of recurring to the composer; but with such as contain experiments in any branch of natural philosophy, the case is very different. The first point an inquisitive reader attends to, is the reality of the experiments; an enquiry not a little necessary in an age so fertile in book-making, which produces so many experimental husbandmen, whose fields yield such great crops without soil, and whose cattle are fattened so nobly without food—farmers without farms. But geniuses, in whom invention supplies the defect of land, feed, cattle, implements, and every requisite save pens and paper; while such continue to write, it is very necessary, in works of this nature, for the author to set his name to his labours, with that of the place where his experiments were made, that all who think it proper may make any inquiries they please into the truth of his assertions; and though the degrees of his accuracy cannot be thus discovered, yet the world has at least the satisfaction of knowing, that they read the composition of one who is a real farmer, and who made great numbers of experiments. It is upon this account that I prefix my name to these sheets, and very far from any vanity of being known as an author. A solitary, who lives in the obscurity of a retired village, whose attention is fixed upon the little circle of his family, and whose views are bounded by the limits of his farm, has other objects to employ his mind upon, than literary reputation. If a desire of being serviceable to the interests of his country in general, and his profession in particular, induces him to publish his remarks, the world deserves too much respect, to let him neglect the rendering his work as perfect as he is able; the fame of doing his best, let him possess, but not enjoy. As to the mere reputation of being known as the writer of a book, it is to him a bubble; it will not manure an acre of land, nor fat a single chicken.

It may be said, that all writers on agriculture are not impostures: some have published genuine works; and among the infinity that are well known, there surely may be gleaned knowledge sufficient, without the necessity of adding to a number confessedly too great already.—I am very far from attempting to overturn a whole city, to find a foundation for my cottage; but a very little reflection will be sufficient to remove this objection. Supposing there was a perfect treatise on agriculture, it could never reasonably preclude others; for the variety of soils, vegetables, and modes of culture, is so great, that a thousand admirable works might be published, and yet the subject incompletely treated. This is too clear to need a proof. As to the merits of former productions on the subject, a few cursory remarks on the chief of them will not be foreign to the present purpose.

Whoever peruses the antient authors *De Re Rustica* with the least attention, will be convinced, that they had no just idea of experimental agriculture. They eternally lay down their instructions, by whole chap-

ters, in the directive stile; teaching their readers how to act, before they convince them by experiments that they understood it themselves; dealing in general reflections, and inserting many observations, not only of a ridiculously weak and trivial, but even of a most superstitious nature. The best of them, Cato, Palladius, Varro, and even Columella himself, abound with many instances of these faults. In one word, they had no notion of registering experiments. The Geoponic writers are much lower in merit; for they have all the faults of the former, but with less authority.

Unhappily, most of the modern writers upon this subject adopt in general the manner of the antients; liberal of instructions and reflections, without experiments: this appears to be the case with Gallo^a and Tarello^b, two Italian writers, in the extracts I have seen from their books; but I never read the originals: with our Fitzherbert^c and the Frenchman De Seres^d it certainly is; both of whom not only practised, but really understood husbandry; and valuable as the works of the former were for the age in which he lived, yet his forty years experience produced not one experiment.

The enquiries of the great BACON which related to agriculture, as far as they extend, are worthy of his immortal genius—purely experimental, and related with a philosophical precision; strange, that succeeding writers should not catch from his works a juster idea!

I have never been able to meet with any of the works of Gabriel Platte; and therefore know not in what manner he published his knowledge, whether by registering his experience, or only the reflections which were occasioned by that experience. Hartlib's Legacy, though not much in the experimental stile, is a work of great merit, and by no means so thickly strewed with the extravagances of the age as the works of some cotemporary authors. Beati's annotations have too many of them. See his rape crops that *cannot* produce *less* than from 5 to 10 quarters *per* acre^e. Sir Hugh Platte, in his treatise of pasture and arable lands, discovers no ideas of a just experimental agriculture. In some of his other works he even burlesques agriculture. See, in one of them^f, the part he entitles *A Philosophical garden, with a touch at the vegetable work in physick, whose principal fire is the STOMACH OF THE OSTRICH*. A most delectable farrago of nonsense! Blythe talks much of his experiments, and inserts^g some; but they are all so extravagantly successful, and described in such hyperbolical terms, that one must be strangely wanting in common sense, to believe half he says; clover worth from six even to twelve pounds an acre; turneps, the same^h; and that without hoeing, after sowing 8 or 10 quarts of seed *per* acre; and, with a farmer who asserts, that a hog will not eat a turnep without boiling! Crops of oats raised worth 6*l.* *per* acre,

^a *Vinti Giornate dall' Agricoltura*, 4to, 1550.

^b *The Boke of Husbandry—Surveying*, 1539.

^c *Legacy*, 279. 1655.

^d *The English Improver Improved*, 1652.

^e *Ricordo d' Agricoltura*.

^f *Théâtre d' Agricult.* 1600.

^g *Garden of Eden*, 1659, 5th edit. p. 167.

^h P. 184. 262.

upon land that was good for nothing; with an hundred other *surprizing, incredible, and gallant* EXPERIMENTS; to some of which the author not improperly prefixes the introduction of "*Reader, if thou darest to believe me.*"

Speed gave into most of the extravagant promises of success, that so much disgrace that age; advice to improve by rabbits in hutches, up to 2000*l.* a year—enough to ruin any man, p. 13.—turneps 30*l.* an acre, p. 19.—one acre of clover grass being made into hay, and the rest eaten green, will keep four cows winter and summer, p. 45ⁱ.

Stephenson, in the reign of Charles the Second, published a book of farming, which I shall quote as a curiosity: it is a character of the months—a kind of kalendar:

"JANUARY. It is now january, and winged Time (the measure of motion) begins to turn the wheel of his revolution. The smiling fields and youthful meadows have lost their party-colour'd liveries: the woods have parted with their beauteous verdor; and the amorous trees, that but the other day with outstretch'd arms embrac'd each other, stand now at a distance. The fisherman hath now but a cold trade; and the frost-nip'd centinel keeps a hard watch, when he dares not for his ears stir off, though he be ready to eat his fingers end. The woodcock and the pheasant pay their lives for their feed; and the hare, after a course, makes his hearse in a pye. The maid is stirring betimes, and, slipping on her shoes and her petticoat, groaps for the tinder-box, where, after a *conflict* between the steel and the stone, she *begets* a spark; at last *the candle lights on his match.*" P. 2. 4. 5.

"MARCH. The tender lips are now masked, for fear of chopping; and pomatum is the chambermaid's lip-salve for the wounds of the wind. The soft and delicate hands must not be ungloved; but the good housewife hastes to the open fields, and bleaches her linen with the breath of Æolus, which in dirty december had gotten the yellow jaundice, and this is the only time to purge them." P. 12^k.

Worlidge^l is not only totally devoid of experiment, but very superficial.

Mortimer^m, in one respect, is by no means a bad writer: he is every where *practical*, never hunts after new ideas, and had no vanity of shining either as the founder of a system, or as an author: he pretends to no more than collecting and methodizing the commonly-received ideas of good husbandry; and this he executed in a plain and judicious manner.

Lisleⁿ is one of the most peculiar writers that has appeared in the walk of agriculture: it is difficult to call his book a collection of experiments,

^l *Adam out of Eden, or an abstract of divers excellent experiments touching the advancement of husbandry, by Ad. Speed, Gent. 1659.*

^k *The twelve months, by M. Stephenson, 1661.*

^m *The whole Art of Husbandry, 8vo, 2 vols.*

ⁿ *Systema Agriculturae, 1668.*

^o *Observations in Husbandry, 4to and 8vo. 2 vols. and*

and yet difficult to refuse it that title; for he registered his *observations* in no un-experimental manner: whatever he inserts, is the result of experience, either of his own or of old farmers; and, being drawn immediately from the source, is undoubtedly valuable: nor had he any favourite point in pursuit, to warp his judgement; for he gives his readers nothing but the plainest narratives. And yet, considering them in the light of experiments, they are strangely imperfect, scarcely ever containing above a tenth part of the circumstances which ought to be known.

Next appeared the most famous of modern cultivators, the great Mr. Tull^o, who, with all the advantages of learning, fortune, travelling, and a vast share of natural penetration and ingenuity, saw with wonderful quickness the omissions of all preceding writers, and yet himself split upon one of the rocks he had so much condemned in others. Full of the justest ideas of the importance of proceeding on experiment alone, he executed a vast number; and for many years formed repeated trials of his method, upon a large extent of ground. But, when he came to publish, instead of laying before his readers a plain narrative of his experience, and subjoining his reflections, he composed a folio of reflections, instructions, and opinions, which might be just and well founded, but carried not with them the proofs of their propriety. To write in general of having tried experiments, yields little satisfaction, however judicious they may be. We read the work of this reviver of the drilled husbandry with the most poignant regret, to think that such a number of important trials should have been made, and none of them registered. Besides the want of proceeding in this method, Mr. Tull was by no means an impartial writer: though not the original inventor of the drilled plough, yet he was the reviver of it, and embraced the idea with the utmost warmth; inasmuch that he lets nothing escape his pen, that has the least tendency to destroy his favourite measure; the surest plan to damn his work! Hence resulted the neglect into which it fell, and in which it probably would have continued, had not some very spirited writers in France, of considerable fortune as well as knowledge, gone into the practice of it with so much ardor, as to draw the attention of all Europe.

The husbandry writings^p of W. Ellis, of Little Gaddesden, in Hertfordshire, deserve more attention than they meet with at present. They contain a vast fund of real experience; and to those who would make themselves masters of common husbandry, his relations of his own and neighbours practice will be of very great use. It is true, you meet with most disgusting passages, and not the shortest. Perhaps, through half his works, he is a mere old woman, that gives you such chapters as these. *How*

^o *Horse-hoeing Husbandry*, 1733.

^p *Modern husbandman*, 4 vols. 8vo. 1744. *The timber tree improved*, 8vo. 1745. *Agriculture improved*, 2 vols, 8vo. 1746. *Clitern and rate farming*, 8vo. 1745. *Shepherd's guide*, 8vo. 1749.

a shepherd's dog came to be hanged. Of the man gypsy. How a milk-maid came to lose her maidenhead. But, with all this rubbish, I will venture to assert, that Ellis contains more useful common knowledge than half the books of husbandry at present more fashionable.

One cannot deny to Bradley the character of being a sensible writer; and we, in some parts of his works, meet with passages that do him honour; but as for experiments, he talks of them, but gives none. However, many strokes give us a pretty accurate idea of the experimental part of his practice—No kind of dung to be used, till it is like earth itself^a—Sheeps dung and sand, the ruin of light lands^r—Pidgeons and poultry dung to be infused in pitts of water^s—Dry chalk injurious to land^t—Land broke up with design to be laid down again, to be sown with corn as long as it will yield it with spirit^u—The turnep with a root like a parsnep, is best for light lands^w.—These curious remarks shew us the *experience* of the author.

Mons. Du Hamel De Monceau, in the several volumes^{*} he has published, has inserted a great number of experiments, made by himself and his friends, in the old and new husbandry, upon most of the field vegetables. These works have been praised so greatly by other writers, that some may imagine they preclude the want of fresh experiments: it is therefore necessary to give them a little attention.

M. Du Hamel's experiments, and those of most of his correspondents, but particularly M. De Chateaufieux, ought, in many respects, to be considered as an excellent model for future essays. They are generally concise, admirably expressed, and great attention paid to most concurrent circumstances. I heartily wish we had as large a collection of equal authority made in England. But, whatever praise we give to the patriotic individuals who made these experiments, yet there are some circumstances omitted in the relation of them, which are of great importance.

Most of those ingenious gentlemen are in general pretty accurate and particular in their relation of the *culture* and the *produce*: but the *expences* are totally omitted; and I hope the reader will not think me rash in asserting, that, without this circumstance, an experiment is, in many cases, useless. The general turn of M. De Chateaufieux is, the ploughings, the quantity of seed, the horse-hoeings, and the quantity reaped: several relations of the old husbandry, as far as relates to those particulars, with comparisons of the one with the other. But these experiments must, for many reasons, remain unsatisfactory, for want of the expences being specified. The produce of a field is not the least proof of the advantage of any mode

^a *Complete Body of Husbandry*, 8vo, 1727. p. 91.

^r *Ib.* p. 76.

^s *Ib.* p. 82. 83.

^t *Ib.* p. 63.

^u *Ib.* p. 141.

^w *Ib.* p. 238.

^{*} *Traité de la culture des terres*, 6 tom.—*Expériences & réflexions sur la culture des terres*, 1210, 1750, 1753, &c. *Elémens d'agriculture*, 12mo. 3 tom.

of culture, since I will answer for raising vast crops of corn in the worst of fields; but I am far from answering, that I should be any ways rewarded for the trouble. To assert that an acre in one method of husbandry pays two pounds clear of all expences, and thirty shillings in another method, is stating a clear comparison. But to say, that the one yielded thirty bushels, seed deducted, and another twenty, seed deducted, is, in comparison of the two methods, saying nothing to the purpose.

It is impossible from single experiments, or from a great number, in different lands, separately considered, to deduce a satisfactory proof of the superiority of any method. M. De Chateaufieux was sensible of this: but, as his comparative experiments between the old and new husbandry frequently extend no farther than one or two crops on the same land; to supply this deficiency, he gives many calculations of several years, founded on the first or second. This was easily done with him, where wheat is the only crop raised in the old method, with a fallow intervening; of course, he has displayed with as much accuracy as calculations (*not experiments*) can display, that the new method is superior to the old husbandry of Geneva; always, however, omitting the expences. But that omission, in this case, is of no great consequence; since it is very easy to conceive, that *any* method must be better than such an imperfect one.

In England, the case is widely different. No comparison here can be decisive, unless it is conducted through several years, and an exact register and account kept of each method during the whole time. Something of this is attempted in the following sheets.

Let us take one, among many, of M. De Chateaufieux' experiments. In the year 1752, he reaped, from a field sown in the new way, 879 lb. of wheat clear, siftings and seed deducted. He then gives a supposition—"In this husbandry, says he, the same field is sown every year; so that, *supposing* the crop of 1753 to be only equal to this of 1752 (and there is *no doubt* but it will be greater), it will again produce 879 lb.; the amount of the two crops, 1758 lb."—He then comes to the old method—"If we judge, says he, of it by the best crops of former years, it will be three times the quantity of the seed; and, sifting and seed deducted, the clear produce 493 lb.; and consequently the balance in favour of the new husbandry is 386 lb. And as this field yields only one crop in two years in the common husbandry, it would produce in that space only 493 lb.; from whence it follows, that the neat profit of the new culture in the same space of time exceeds the other by 1265 lb."

I have quoted this experiment from many others, as it shews pretty nearly this very ingenious gentleman's method of trial and calculation. In several others, he *supposes* the fields to produce the same quantity for sixteen successive years, and makes many such calculations in favour of the new husbandry.

I shall

I shall observe in general, that suppositions instead of facts are the ruin of all experiments. *Reasoning from facts* may be allowed, and is extremely useful; but is mere ideal amusement when deducted from *supposition*, however seemingly probable. Facts, and nothing but facts, are to be the essence of an experiment. M. De Chateauvieux reaped from this field 879 lb. This is a fact.—He supposes the same crop next year.—I allow it may be very probable; it may even be experienced in many fields, but not in this; it is therefore merely imaginary, and of no authority.

The many ill consequences resulting from an admission of such suppositions; how speedily they increase; to what a length they are carried; how artfully they are interwoven with facts; and how many conclusions and maxims are drawn from experiments thus mixed with suppositions!

I am far from insinuating any thing against M. De Chateauvieux's meaning in the above reflections. I am very sensible, that during the whole continuance of his experiments, the well-being of mankind was his only aim; and that he adopted one method of husbandry in preference to another, on the surest grounds, after a multitude of trials; but when these experiments are published for universal benefit, it is highly necessary (and more especially so in foreign countries) to examine them closely, to discern how far the practice recommended by them promises advantages superior to one totally different, which they were intended to subvert. These very experiments of which I am speaking have been translated into English, and strongly recommended to the attention of English farmers. But wherein will the comparison between England and Geneva hold good? How miserably defective must their old husbandry be, to produce, on a medium, not more than three times the seed!

Before I take leave of this foreign collection, I cannot but remark, that in respect to the omission of the expences, M. De Chateauvieux has recorded several very ingenious experiments, in which such omission is not of consequence; as the sowing in equally distant rows, in double and treble rows on beds, &c. and others relative to the quantity of seed, &c.

M. D'Ebene, in the same collection, gives the expences of the old and the new method; but it is difficult to form any judgement from his account, as he divided the product with his peasants. In another place he gives the expence of bringing an acre into the order M. De Chateauvieux requires, and of cultivating the beds when formed. This calculation comes nearer the mark than any other amongst them; and would have been very satisfactory, had the ploughings, weeding, and harvesting, been rated separately, as we might then have seen the difference of their prices from ours, and calculated accordingly; but yet it is only a calculation, and not a register of the expence which he really experienced.—Upon the whole, I read all these collections with the utmost attention; reduced the pounds into quarters and bushels, and made calculations of the expences; and all without being able to gather one clear idea of the benefit of either the old or new husbandry.

ry, as they are there described. The most rigorous attention could not enable me to answer the plain question (supposing it put by any cultivator whatever), "My land is so and so; will it be advantageous to adopt the drill-husbandry?" I could not answer it to myself.

It is for these reasons, that I venture to conclude M. Du Hamel's collections not so perfect and decisive, as to render useless the labours of others. And although I despair of equalling the penetration and inventive ingenuity of that excellent patriot, who has produced so many admirable works on a variety of the most useful subjects; or of his excellent correspondent M. De Chateaufieux; yet I may, without the imputation of temerity, offer this course of experiments, as, in some instances, more adapted to the practice of British cultivators. I pretend to equal those gentlemen in nothing but sincerity.

The marquis De Tourbilli's excellent work^{*} likewise does great honour to the French nation. The whole range of œconomic writings does not present a more valuable morsel than the history of his improvements. His whole essay is evidently the result of experience; the experimental part of it highly valuable; the preceptive chapters totally unbiassed as to any particular modes of culture; and concern so much the *general* œconomy of a farm, that the want of registered experiments is, comparatively, but little felt. The marquis highly deserves the thanks of all cultivators, for so valuable a present.

The articles concerning agriculture in the *Encyclopédie* of M. Le Roy and M. Quesnay le Fils, I read with uncommon pleasure; and particularly the articles *fermier* and *froment*; likewise *culture* and *grains*. 'Tis true they are not the register of experiments; pretending to no more than accurate descriptions of the several practices, and observations on them, drawn from reason and reflection: they are, upon that plan, excellently performed; and prove a very great share of penetration and judgement in their authors. I know of no compositions on that plan which are superior.

Of the same nature is the piece of Mr. Pattullo^y, who has not only inserted numerous reflections of a practical and judicious kind, but sketched an elegant idea of a newly inclosed farm; and calculated the expences, produce, and profit of it, during a term of years, with no inconsiderable precision. The works of M. Le Large^z and M. Sarcey de Sutieres^a are of a very different nature; for they pretend to be experimental (the latter the effect of twenty years experience), without possessing the merit of good reasoning or reflections.

The observations of the Berne society^b abound with a great variety of truly useful knowledge; and contain many essays upon rural œconomics

^{*} *Memoire sur le defrichemens*, 12mo.

^y *Essai sur l'Amelioration des terres*, 12mo, 1758.

^z *Memoires sur l'agriculture*, 12mo, 1752.

^a *Agriculture expérimentale*, 12mo, 1765.

^b *Memoires et observations recueillies par la société œconomique de Berne*, 8vo, 1760-1767, 24-tom.

in general, that cannot be too lavishly praised. But those essays which profess to be experimental, are by no means so satisfactory as could be wished; they are blended too much with reasonings, reflections, and instructions, all which claimed a place by themselves, unmixed with the circumstances of the experiment. Several of the writers have, however, a proper idea of inserting the expences of their methods, which render their essays greatly more useful than they would otherwise be. But I should remark, that the experimental bear no proportion to the argumentative essays in this collection.

The same remarks are applicable to the agricultural part of the *Britany Memoirs*^a: those of Rouen, and other cities in France, I have not been able to procure.—But to return to Britain.

Dr. Home, in his excellent treatise^c, has given some specimens (a great number, considering the short time he had to execute them in) of pure and truly philosophic experiments, and has laid down rules in a clear, judicious, and concise manner, for others to follow. It is impossible to read his works without improvement, and a regret that he did not extend his enquiries. Had he thought proper to have given his attention to a more enlarged course of experiments, his work would effectually have prevented my troubling the world with this imperfect sketch^d.

I am sorry I cannot speak of Mr. Dickson's work^e in the same terms. He tells us, that he had the management of a considerable farm for many years. If so, it is to be lamented that he did not keep a register of his business, and publish the experiments he made, instead of a volume of reflections without one trial. But the mistake of composing instructions in consequence of possessing experience, is too common in most subjects: experience is an admirable foundation for any kind of structure; but in agriculture, the must be the structure itself, not the foundation. If one tenth of the books published on this art had consisted only of the *record of cases*, agriculture, by this time, would have received the same perfection as medicine.

^a See particularly M. De l'Harpe's *Cultivateur enrichi par les pres artificiels*. Also M. Tschiffeli's *Expériences de culture de diverses especes d'herbes*, &c.

^b *Corps des observations de la société d'agriculture de commerce et des arts, établie par les états de Bretagne*, 1757—1760.

^c *The principles of agriculture and vegetation*, 8vo.

^d One remark is necessary to make on this very ingenious gentleman's work, which I hope will by none be thought a cavil at excellence: it is, the expences of his manure's being omitted; covering a square yard two inches thick with clay, or with clay and dung for instance, is found to be attended with good effects. But where is the use of knowing such a result, while the expence of the manuring is a secret? An hundred improvements of the most brilliant nature might be made, which, upon naming the expences, would be converted at once from improvement into absurdity. I only hint this for the sake of distinguishing between the doctor's experiments, as there are some where the omission was of no consequence.

^e *A treatise of agriculture*, 8vo. 2d edit. 1765.

ry, as they are there described. The most rigorous attention could not enable me to answer the plain question (supposing it put by any cultivator whatever), "My land is so and so; will it be advantageous to adopt the drill-husbandry?" I could not answer it to myself.

It is for these reasons, that I venture to conclude M. Du Hamel's collections not so perfect and decisive, as to render useless the labours of others. And although I despair of equalling the penetration and inventive ingenuity of that excellent patriot, who has produced so many admirable works on a variety of the most useful subjects; or of his excellent correspondent M. De Chateaueux; yet I may, without the imputation of temerity, offer this course of experiments, as, in some instances, more adapted to the practice of British cultivators. I pretend to equal those gentlemen in nothing but sincerity.

The marquis De Tourbilli's excellent work* likewise does great honour to the French nation. The whole range of œconomic writings does not present a more valuable morsel than the history of his improvements. His whole essay is evidently the result of experience; the experimental part of it highly valuable; the preceptive chapters totally unbiassed as to any particular modes of culture; and concern so much the general œconomy of a farm, that the want of registered experiments is, comparatively, but little felt. The marquis highly deserves the thanks of all cultivators, for so valuable a present.

The articles concerning agriculture in the *Encyclopédie* of M. Le Roy and M. Quesnay le Fils, I read with uncommon pleasure; and particularly the articles *fermier* and *froment*; likewise *culture* and *grains*. 'Tis true they are not the register of experiments; pretending to no more than accurate descriptions of the several practices, and observations on them, drawn from reason and reflection: they are, upon that plan, excellently performed; and prove a very great share of penetration and judgement in their authors. I know of no compositions on that plan which are superior.

Of the same nature is the piece of Mr. Pattullo†, who has not only inserted numerous reflections of a practical and judicious kind, but sketched an elegant idea of a newly inclosed farm; and calculated the expences, produce, and profit of it, during a term of years, with no inconsiderable precision. The works of M. Le Large‡ and M. Sarcey de Sutieres§ are of a very different nature; for they pretend to be experimental (the latter the effect of twenty years experience), without possessing the merit of good reasoning or reflections.

The observations of the Berne society¶ abound with a great variety of truly useful knowledge; and contain many essays upon rural œconomics

* *Memoire sur le defrichement*, 12mo.

† *Essai sur l'Amelioration des terres*, 12mo, 1758.

‡ *Memoires sur l'agriculture*, 12mo, 1752.

§ *Agriculture expérimentale*, 12mo, 1765.

¶ *Memoires et observations recueillies par la société œconomique de Berne*, 8vo, 1760—1767, 24-tom.

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These objections are equally applicable to Mr. Randall's elaborate treatise. He is another writer who speaks from experience; his book is filled with experience, but no experiments. A vast extent of reasoning is made use of to prove the advantage of certain methods, which might have been demonstrated by half the number of pages taken up with a register of actual experiments. The want of these is greatly felt; for Mr. Randall's fallow year is so prodigiously expensive, that his readers must necessarily desire to see how it answered with himself, before they venture to adopt it. He assures them, that it will greatly more than pay all expences.—This is possible; but no foundation to begin the same work on. Had he given a number of acres on which he tried his method, stating every operation, and the actual expence, with the produce and profit, &c. &c. for a term of years, such a single experiment would have more weight with the world than a volume of reasoning from experience. Every part of his book is filled with accounts of a variety of experiments, tried in several methods of culture; and he tells us the event was favourable, was great, &c. &c. and I doubt not but his reasons for adopting any method were founded on real experience: but, had he registered those experiments, every man might then have judged for himself, and have seen clearly, from a comparison of his own soil with the author's, how far such experiments were conclusive to him; and thus their use would have been general. I cannot without regret reflect on the variety of trials which must have been made by this gentleman, in various methods of culture, on many different vegetables, and on a vast variety of soils, and yet no register of such experiments to have been preserved! How truly valuable would the book have been, had it simply given the history of their practice! Of what little avail is the subtlest reasoning alone in matters of agriculture?

The remarks which Mr. Stillingfleet has interspersed through his translations from the *Amœnitat. Academ.*^b particularly his observations on grasses, deserve to be universally read.

The experiments of Mr. Whynn Bakerⁱ merit the utmost praise; all that I have seen published are judicious, important, accurate, and conclusive; I heartily congratulate our sister kingdom, upon possessing a cultivator, whose ideas are so enlarged, and whose registers are so satisfactory^k. Mr.

^b *Miscellaneous tracts relating to natural history, husbandry, and physic*, 8vo. 1762, 2d edit.

ⁱ *Reports to the Dublin society*.

^k As Mr. Baker inserts with his experiments of comparison between the old and new husbandry calculations of many years, drawn from the result of one or two, the reader should be cautious of not distinguishing in authority between the experiment and the conclusions. I do not hint this in the stile of finding fault with those calculations, but only as a caution to the reader. Mr. Baker has kept his reflections distinct from his experiments; and when that method is followed, a writer has the liberty of inserting whatever calculations he thinks proper, as his readers are in that case quite at liberty to reject or approve his reasoning.

Billings's treatise on the culture of carrots is a small, but very precious, performance; truly experimental, and very determinate: it is pity he has not presented the world with a continuation of his practice. Mr. Rocque's, on lucerne, and other grasses, is the very contrary; wild, improbable, inaccurate, and totally inconclusive.

The last work of importance upon the subject of agriculture which the publick has been favoured with, is the production of that excellent cultivator the reverend Mr. Harte¹, and is much superior to any eulogium, in my power to bestow. The first essay is upon agriculture in general; the second contains experiments upon lucerne, which are much the most satisfactory of any that ever were published: they were executed with as much penetration, as related with precision and eloquence; are clear, impartial, and decisive.

It was the perusal of these books, of which I have ventured this slight review, that induced me to suppose the subject by no means exhausted; and that I might add to their number, without the imputation of attempting to improve perfection.

Extremi primorum, extremis usque priores.

The publick must judge of the utility of my labours. I submit with deference to their decision; but, conscious of numerous imperfections, I feel with anxiety the rashness of parting with a manuscript on which I wished to stamp a merit it is far from possessing.

I have never spared attention, and was always more liberal of my expence that concerned experiments than was prudent in a man of my fortune. One circumstance respecting this I must be allowed to mention; which is, that the experimental part of this work, exclusive of products, has cost me near twelve hundred pounds; and I must farther be permitted to add, not arising from bad husbandry (although I have been in many instances a bad farmer); but from a resolution to try every thing, even those experiments which I was sensible could not answer, but which, being recommended by writers of character, I brought to the fair test of experience alone. The undertaking to conduct such a variety of trials as I have attempted here, is what I could much dissuade any person from, whose fortune requires that he should be solicitous about oeconomy; for how great soever may be the benefit to the publick, yet that consideration will not, except in very patriotic minds, recompense a man for deviations from the prudent path. There may have been ages in which patriotism was as substantial a good as food or rayment; but the present I take to be somewhat different.

Upon fixing in Hertfordshire, I prepared some fields of my new farm for small experiments; and have now eight acres of such, besides trying

¹ *Essays on husbandry*, 8vo. 1754.

the culture in large of various crops very little known here; but in these pursuits I shall take care, not to launch into such extensive undertakings as I now venture the register of to the reader's eye. I have a strong idea of the utility that would result from continued series varied with the soils I at present occupy; but past experience will keep me from the presumption of a private execution of public ideas. And I flatter myself, that there will not in future be the same want of such endeavours of mine; as a noble spirit is raised among the nobility and gentry of large fortunes in favour of agriculture:—they are the only people who can try experiments effectually:—it is a business much beyond the power of others.

In which the following EXPERIMENTS were made:

At BRADFIELD COMBUST, near Bury, in SUFFOLK.

C R A S S

THE soil, like most of the neighbouring fields, is a loamy brick earth called, in this neighbourhood, a loose woodcock soil, retentive of water on the surface; but this I apprehend, is owing to a bed of clay, universally to be found at the depth of two or three feet. When drains are cut in it, the water runs off through all above the clay. It however increases in stiffness as it approaches the clay, which is white. This soil, when drained and well managed, is found exceedingly good, and capable of any production. The pasture in question was formerly very wet, and yielded scarcely any grass, but over-run with rushes and moss. For several years it received great improvements; such as deep drains, good ditches, and a great variety of manures; so that at the time these experiments began it was a very good upland pasture, bearing large crops. I should observe, however, that when my cows fed in it, the butter tasted disagreeably. I am not certain whether this circumstance arose from a bad herbage or much manuring. The surface is nearly flat.

A very good upland meadow; more so naturally than from art. Soil like A, but lighter, and much dryer, without any drains; bears good crops of sweet hay; a good sture at the top of it, which runs over seven or eight months in the year, and waters part of it to its great benefit. A little descent to the north.

P. R. [xx] F. A. C. E.

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rit is raised among the nobility and gentry of large fortunes in favour of
agriculture:—the nobility and gentry who have been so successful in their
—it is a business much beyond the power of others.

THE FIELDS,

In which the following EXPERIMENTS were made:

At BRADFIELD COMBUST, near BURY, in SUFFOLK.

G R A S S.

A.

THE soil, like most of the neighbouring fields, is a loamy brick earth, called, in this neighbourhood, a loose woodcock soil, retentive of water on the surface; but this, I apprehend, is owing to a bed of clay, universally to be found at the depth of two or three feet. When drains are cut in it, the water runs off through all above the clay. It however increases in stiffness as it approaches the clay, which is white. This soil, when drained and well managed, is found exceedingly good, and capable of any production. The pasture in question was formerly very wet, and yielded scarcely any grass, but over-run with rushes and moss. For several years it received great improvements; such as deep drains, good ditches, and a great variety of manures; so that at the time these experiments began, it was a very good upland pasture, bearing large crops. I should observe, however, that when my cows fed in it, the butter tasted disagreeably. I am not certain whether this circumstance arose from a bad herbage or much manuring. The surface is nearly flat.

B.

A very good upland meadow; more so naturally than from art. Soil like A, but lighter, and much dryer, without any drains; bears good crops of sweet hay; a pond situate at the top of it, which runs over seven or eight months in the year, and waters part of it to its great benefit. A little descent to the north.

C. A com-

C.

A common lawn, never mown, of very rich sweet grafs. Soil various, but mostly like A.

D.

A dry light foil, rather inclining to gravel; but greatly mixed with loam; part of it watered by a ditch from the water coming from B; bears a good burthen of hay in wet seasons; but is much infested with noxious weeds. Has been mown for, I believe, these twenty years.

E.

A flat and very wet field. Soil the same as A. During six or seven years it was not let to a tenant, and taken tolerable care of some water-furrows being opened, and several dressings of manures spread on it; but being after that let, it soon was over-run with moss and some rushes.

F.

A rather better foil than E, but of the same nature; somewhat improved by constant feeding, as it is a thorough-fare to one farm-house; but is very flat and wet, having no drains. An excellent meadow in a very dry season, as there are many very large spreading oaks in it.

G.

Soil the same as A, in its first worst state; bears but little grafs, but much moss, rushes, and some straggling bushes. Surface nearly flat, and miserably laid by a tenant thirty years ago, after ploughing its heart out.

H.

The same foil as G, adjoining to it, and in almost as bad order, excepting some parts being not quite so wet. Half an acre of its surface dug away, two feet deep, to burn into bricks. A kiln formerly in the field. The whole over-run with moss, rushes, bushes, and the dry parts with ant-hills.

I.

The same foil as the preceding: very flat, and as wet; but, as it has not been laid above fifteen years, not infested with rushes; but has moss, and bears very little grafs.

K.

The same as I, but rather wetter.

L. Same

F I E L D S.

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L.

The same soil as the preceding, and adjoining to it. Much over-run with rubbish; but in rather better heart than the four last.

M.

The same soil with the five last; but much better water-furrowed; bears more and sweeter grass than any of them; was sometimes mown: however, very indifferent compared to a pasture in tolerable order.

N.

Exceeding wet; otherwise I believe nearly on a par with M in point of goodness. Soil rather lighter.

A R A B L E F I E L D S.

O.

A fine rich light loam. The depth of this good mould various. Second stratum in some places gravel, in others a stiffer loam; and under all, I believe, clay. A very good descent to the north, which carries water off. Excellent turnep and barley land. This loam is of a much lighter, finer, and dryer consistence, than those I have mentioned in the grass lands.

P.

Near half this field is the same soil as O, but in some places more gravelly. The other part of it a very moist loam, and a clay at the depth of two feet; and would be very wet, but the whole field has a good descent to the west. Three acres of it are particularly heavy and wet, owing, in some measure, to a large number of oaks in F, adjoining to the south, which prevent the winds acting fully on the surface of this part of the field.

Q.

A very strong soil; clay at a little depth; bears excellent wheat. Too wet; but a tolerable descent to the north: wants draining.

R.

A very fine light soil; in many places gravel; several pits in the field; bears admirable turneps.

S.

A loose woodcock loam on the surface, and under that a clay; much such a soil as the indifferent pastures I have described. A small descent on part of it to the north.

T.

The same soil as the preceding.

U.

The same as the worst part of T.

W.

The same soil as the preceding; but not so wet, as there is a slight descent to the south.

X.

Nearly the same as W, but better.

Y.

Soil of the same loose woodcock loam as the preceding; but lighter. Descent to the east.

Z.

Same as Y, but the descent slightly to the north.

A*.

Same soil as Z, but perfectly flat, and consequently very wet; was grass, but broke up in 1759.

B*.

Soil the same as the preceding, but not so wet. A slight fall to the south.

C*.

Nearly the same as B*, but better land.

D*.

The same as B*.

E*.

The same.

F*.

F*.

One part of the field a light gravelly soil: very good turnep land: the rest heavier and wetter, more inclining to the woodcock brick-earth.

G*.

A light loam, but not so good as O.

H*.

The same.

I*.

Wood; soil the same as A*.

K*.

Wood: the same.

L*.

Experiment field; same soil as S, but descent to the north.

M*.

Experiment field: light gravelly loam, near as good as O: excellent turnep and barley land.

INTRODUCTORY EXPLANATIONS.

IT is necessary to inform the reader, that one circumstance in the register of the ensuing experiments perplexed me greatly: it is the method of charging the expence of tillage and carting. There were three ways of minuting it: 1. To follow the general hiring price of the country. 2. To charge only that part of the expence which is *certain*, viz. the labour. 3. To estimate it at what it really cost me. So many objections offered themselves to each of these methods, that it was no easy matter to decide upon either. If the first was adopted, the account cannot be true, because there is a profit upon the hiring prices; and, if we judge by the readiness of the farmers to plough by the acre, a considerable one. Why, therefore, charge the crops with expences that never existed? But it is only ploughing that has a fixed price: harrowing, rolling, and carting, depend upon the particular agreement. To the second method it is objected, that the omission of so considerable a part of the expences as the use of horses, and wear of implements, would leave the experiments very incomplete, and in no case permit a clear account to be drawn up. The third also admits of several objections. The real expence must vary every year, and perhaps greatly; for it will depend on the expence of keeping horses and oxen, which rises and falls prodigiously, as hay, oats, &c. rise and fall; and according to the degree of health they enjoy; two or three sick horses will sensibly affect the price of every acre of land that is ploughed. Now the mischief of various prices will be felt in any general table of the products, &c. of any field: a crop that is one year advantageous, may in another

another be a loss, and owing to the variation of the price of tillage; besides, both oxen and horses were used upon this farm, and the price between them varied: likewise iron and wooden ploughs, with another considerable difference. How are these difficulties to be reconciled? These happen in the same years; so that, in a comparison between the old and new husbandry (for instance), these variations might reverse those which resulted from the real merit of one culture in preference to another. Comparisons are, perhaps, the most useful parts of experiments; and they require an equality of expence in every thing but what results from the nature of the methods compared. Such appeared to me the disadvantages attending each of these methods: let us next consider wherein they are beneficial.

The first, as it comprehends (the ploughing) all in one sum, and never varies, would perfectly preserve the equality so requisite for comparisons.

The second, although it gives but a part of the expence, yet it gives that part truly; and, as it is always the same, has every advantage that results from the above-mentioned equality in comparison. It is further beneficial, in being very near what must be the price over the greatest part of the kingdom; so as to leave no other difficulty with any cultivator to transfer these experiments to his own farm, and thereby reap the benefit they are designed to answer, than the adding his own price of the use of horses, and wear and tear, which it is observable he must do, was either the first or third methods followed, and have the additional trouble of extracting the charge already made.—The advantages of the last way consist in being perfectly genuine, in substituting nothing in the place of truth, and in giving the whole truth: the objections to it on account of variation are allowed; but then it is impossible to avoid other variations of equal or greater importance; such as the expences of harvest, &c. which must depend upon the season.

Upon the whole, I determined, after much consideration, upon the second method, that of charging the labour alone, as liable to the least objections; but the last had so many arguments in its favour (though inferior to the other), that I could not bring myself totally to reject it; and accordingly I resolved, after the accounts were drawn up upon the other plan, to deduct the expences of cattle, and repairs of implements, from the profit, or add them to the loss; by which means the reader may adopt which he thinks the most advantageous.

II.

Another point of some consequence, and about which there have been more opinions than one, is the *price of the product*. Should I charge the average national prices, or the real ones? There are reasons for both. But, upon consideration, I determined for the latter, as the price is very often a
consequence

consequence of the culture given; the best grain always producing the best price. Had I not been fearful of swelling these sheets to an immense bulk, I should have calculated both, and given them to the reader, that he might have been guided by that which is most consonant with his particular ideas.

III.

All the circumstances of the following experiments are duly registered; but it is necessary to remark in general, that the crops upon the whole are not so considerable as they would have been on the same land on a longer course of years; and for this reason it was always my practice to prepare hills of clay, turf, or other moulds, to mix with the dung which was produced every year upon the farm; these were turned over several times, and kept two years, and some of them three, before they were spread upon the land; so that, upon quitting the farm unexpectedly, more than two years dung, thus mixed up, was lying in heaps in the fields. These I was paid for by the succeeding tenant: but it would be impracticable to divide the sum among the crops of those years; consequently no notice can be taken of the circumstance of an unusual omission of manuring. Thus much is necessary, in explanation of several crops being worse than they otherwise would have been; but the experiments of them are nevertheless of equal use, as it is as requisite to know the culture, expence, and produce, of fields not manured, as of those that have been ever so plentifully dunged.

IV.

The fields compose two farms; the first I took at Lady-day, 1763, paying the farmer for seed, tillage, &c. which prices, however, are not charged, but rated in the manner of the succeeding years; otherwise they would have been so different from the rest, that no general conclusions could have been drawn. As my business began at Lady-day, I reckoned the years from that time: 1763 extends, for instance, to Lady-day 1764; and so of the rest, unless in cases where a small variation was necessary, as in the keeping of horses, when the year extends from the turning out to grass in one, to the same circumstance in another.

V.

Steatch; the broad beds into which fields are ploughed: all above a yard broad are called *steatches*; all under a yard *ridges*.

VI.

Respecting the rent of the following fields, it is necessary to explain, that the *real* sum paid for the land is charged; but as that is frequently much under the value, and of course might occasion a very great deception in the register of any experiments, it is absolutely requisite to add, that in the present

INTRODUCTORY EXPLANATIONS.

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sent case it is to all intents and purposes a very fair and reasonable tenure, equal to *any* of the rents of the adjoining farms, and superior to most; and not at all different from that of the preceding occupiers of the same land, by lease only of seven years standing. In some modern experiments that have been published, this point has by no means been sufficiently explained to the reader: valuations are at best but deceiving; and a gentleman may very easily publish trials most marvelously successful, if he values his own improved homestead at the rent of the neighbouring unimproved farms. Every one who knows my farm, knows the accuracy of the above assertions.

VII.

Whenever the products of corn are not divided into best sort and screenings, the latter were so bad as to be worth scarce any thing at all, the rest of one good quality sold together.

VIII.

I did not possess a drill plough till the spring 1766; before that time, I executed all, at a very great expence, by a line and hoe, covering with a rake. After I had a drill-plough (Mr. Randall's), my expences *decreased*; but my difficulties from the worthlessness of the instrument *increased* tenfold. Had I, in the ensuing experiments, given the reader my *real* expences, the register would, in some respects, have been useless; for the drill-husbandry must always be spoken of under the supposition of good instruments, and not line and rake work in one instance, and endless trouble and repairs in the other. There are objections to my general suppositions, arising from the defects of all drill-ploughs yet discovered; but they by no means amount to those to which a contrary conduct would be open.

E X P E.

EXPERIMENTAL
AGRICULTURE.
BOOK I.
OF GRAIN.

VOL. I.

[B]

EXPERIMENTAL

AGRICULTURE

BOOK I

OF GRAIN

[M]

Vol. I

B O O K I.

O F G R A I N.

G E N E R A L I D E A.

FOR the sake of perspicuity I throw the experiments on grain into a book by themselves: grain is an exhausting crop, but pulse an ameliorating one; it is necessary therefore, for the conclusions which will arise from the cultivation of each, to keep them separate. Experiments have been made only on wheat, barley, oats, and buckwheat: they are treated distinctly in the order of time; which was thought preferable to registering the crops of every field, of whatever they consisted, one after another, as that method will likewise be partly followed in the general, by giving a table (in its proper place) of the heads of several fields' culture. By these means an opening will be made for the *particular* observations on each species of corn as they arise, and then for the *general* one on each field.

C H A P. I.

O F W H E A T.

THE order in which I arrange the experiments I have made on this grain is as follows:

1. The culture in the old method.
2. The culture in the new.
3. Comparison between them.
4. The quantity of seed.
5. The time of sowing.
6. Miscellaneous experiments.
7. General remarks on the culture of wheat.

The two first of these heads might be subdivided, but a multitude of divisions may occasion as much confusion as a want of the requisite ones.

S E C T. I.

CULTURE and PRODUCE in the old method.

THE common way of sowing wheat, in the direct manner of throwing the seed into the ground, admits of very few variations; but in the general management of the crop there must necessarily be a thousand degrees of good and bad husbandry. In a practice of any extent many of these must of course arise, and it is from a register of them that the consequences of each are to be distinctly known. The following experiments contain instances of some wheat crops by no means well managed; others that had all possible advantages of fallowing, manuring, &c.; some the product of stiff clays, others of very light loams: the preparation has been by fallowing—by clover—by pulse, &c. These variations will explain the great difference in the product.

EXPERIMENT N^o I.

Culture, expences, and produce, of 6 acres, fields Q and G, 1763.*

CULTURE.

I entered this field at Lady-day 1763, paying the farmer the expences of seed, tillage, &c. In 1759 it was fallow. In 1760 wheat. In 1761 oats. In 1762 fallow.

EXPENCES.

	£.	s.	d.
Labour. Plowing 5 clean earths and 1 half earth, 5s. 6d. per acre,	1	13	0
Ditto. Harrowing,	0	3	0
Manuring,	1	17	0
Carried over,	3	13	0

* These fields were then in one.

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GRAIN.

Book I.

Brought over,	-	-	-	-	-	-	-	-	3	13	0
14 bushels seed,	-	-	-	-	-	-	-	-	2	9	0
Reaping,	-	-	-	-	-	-	-	-	0	16	6
Threshing,	-	-	-	-	-	-	-	-	3	1	7
									10	0	1
Rent, tythe, and town charges,	-	-	-	-	-	-	-	-	5	2	0
									15	2	1

PRODUCE.

	£.	s.	d.
Received for 19 qr. 2 bushels,	20	7	4½
Expences,	15	2	1
Profit, 17s. 6½d. per acre,	5	5	3½
Ploughing ^b , at 1s. 6d.	2	9	6
Harrowing, at 3d.	0	4	6
Manuring ^c ,	2	4	0
Carting in harvest, 4¾d. per acre,	0	2	4½
	5	0	4½
Profit per acre 10d.	0	4	11
Total expence per acre, 3l. 7s. 0¾d.			

OBSERVATIONS.

This crop amounted to 3 qr. 2 bushels *per* acre, far from a bad one: but the weather proved so extremely unfavourable at harvest as to damage it greatly. It was not all cut before the 23d of sept. and the rains came so successively that some of it was in the field a fortnight, and most of it sprouted either in the field or the barn, so that although wheat yielded a good no more than 10s. 6d. could be gained for this.

EXPERIMENT N° 2.

Culture, expences, and produce, of 9 acres, part of field P, 1764.

CULTURE.

This field was clover in 1763; the weather proved so unfavourable that I could not sow it till the 24th of October.

^b This tillage was in 1762; but as my accounts reach not so far back, I suppose the price of keeping horses and repairs to be the same as in 1763. For an explanation of these charges see TILLAGE.

^c I find the proportion of carting manure, to be nearly at 4s. 6d. horses and repairs to 3s. 6d. labour, by which rule I give the first charge to the above, by proportioning it to the last: If 3s. 6d. gives 4s. 6d. what will 1l. 17s.?

EXPENCES.

Chap. I.

W H E A T.

[7

EXPENCES.

	£.	s.	d.
For 2½ qr. of seed, - - - - -	4	8	0
Lime and salt for steep, - - - - -	0	3	2
One clean earth, - - - - -	0	9	0
Harrowing, - - - - -	0	3	4
Water-furrowing, - - - - -	0	4	6
Reaping and harvesting, - - - - -	1	7	6
Threshing 17 qr. - - - - -	2	12	2
	<hr/>		
	9	7	8
Rent, &c. - - - - -	7	13	0
	<hr/>		
	17	0	8

PRODUCE.

	£.	s.	d.
For 6 qr. 6 bushels, at 39s. - - - - -	13	3	3
For 2 bushels of offal wheat, - - - - -	0	8	0
For 9½ qr. at 41s. - - - - -	19	9	6
For 4 bushels, - - - - -	1	0	0
	<hr/>		
	34	0	9
Expences, - - - - -	17	0	8
	<hr/>		
Profit 1l. 18s. 4d. per acre, - - - - -	17	0	1
	<hr/>		
	£.	s.	d.
Ploughing, at 1s. 6d. - - - - -	0	13	6
Harrowing, at 3d. - - - - -	0	6	9
Carting in harvest, at 3¼d. per acre, - - - - -	0	2	9¾
	<hr/>		
	1	3	0¾
	<hr/>		
Clear profit 1l. 15s. 2d. per acre, - - - - -	15	17	0
	<hr/>		
Total expence per acre, 2l. os. 4¾d.			

OBSERVATIONS.

This crop did not amount to 2 qr. per acre, which on this field I consider as a very poor one. But I must attribute this to two causes: first, the general fate which attended the crops for many miles around. In several parishes in the neighbourhood, they were supposed not to amount to above 1 qr. and ½ per acre, secondly my having been absent when it ought to have been weeded. When I returned home, I cut the thistles in some acres, but soon found the men damaged the corn too much, and was therefore forced to let the crop take its chance. At harvest the docks and thistles wore a very formidable appearance, and were in many places so thick, that few could be rejected, but were

were bound up in the sheaves, which consequently took the longer to dry and in the time got much rain on them.

EXPERIMENT N^o 3.

Cultivation, expences, and produce, of 1 acre, field M, 1764.

CULTURE.

This acre was winter fallowed by 3 plowings, from michaelmas 1762, to may 1763, and between that time and sowing, received a summer fallow of seven ploughings besides harrowings. In the beginning of june, 10 cart loads of coal ashes, mortar rubbish, &c. &c. mixed together were spread upon it, it being designed for turneps; but changing my mind, I kept it for wheat through curiosity, to discover the effect of compleat tillage and manure united: attention was given to mix the manure well with the soil by the repeated plowings and harrowings. The first week in september, 60 bushels of foot were sown over it, and 40 of malt dust: these manures I used in preference to dung, that no seeds of weeds might be carried into the land: the middle of the same month it was sown with 2 bushels of red wheat, from Cambridgeshire, steeped in brine and washed well, the light grains, &c. skimmed off, and then limed and salted.

It came up with great luxuriance, insomuch that by christmas it was quite thick and matted over the land. In january some farmers advised me by all means to feed it off with sheep, asserting that it would be mildewed without. I followed their advice, herdled it in, and fed it off close. In april many weeds arose, which frightened me; but having heard of some farmers hand-hoeing wheat, I determined to apply that remedy, and accordingly sent in three men with the hoes they commonly made use of for this purpose, 4 inches wide; I directed them to cut them up freely, and not regard cutting up the wheat, which they had orders to thin every where: this work they executed very well, insomuch that nothing more was seen of weeds. It escaped laying, was pretty lucky in harvest. Threshed soon after, the produce 4 qr. and $\frac{1}{2}$.

EXPENCES.

	£.	s.	d.
Eleven clean earths,	0	11	0
Five harrowings,	0	2	3
Cost of the first manure and labour,	1	13	0
Ditto of the second,	1	19	4
Two bushels of wheat,	0	11	0
Sowing,	0	0	6
Lime and salt,	0	1	1
Herdling,	0	1	0
Handhoeing,	0	13	0
Reaping and harvesting,	0	7	6
Threshing,	0	12	6
Carried over,	6	12	2

Brought over,	6	12	2
Rent, &c. &c.	1	14	0
	8	6	2
PRODUCE.	£.	s.	d.
4 qr. and $\frac{1}{2}$,	10	2	6
Expences,	8	6	2
Profit,	1	16	4
	£.	s.	d.
Ploughing,	0	16	6
Harrowing,	0	1	3
Carting on road for the 2 manurings,	2	2	8 $\frac{1}{2}$
Ditto at home on first,	0	2	1
Ditto in harvest,	0	0	3 $\frac{1}{2}$
	3	2	10 $\frac{1}{2}$
The above profit,	1	16	4
Loss,	1	6	6 $\frac{1}{2}$

OBSERVATIONS.

Four quarters and $\frac{1}{2}$ are by no means a very extraordinary crop in this country, with common management; but this year it is extremely so: I remarked in the last experiment the great unfavourableness of the season, which was so extreme, that I believe no such crop as this was known any where in the neighbourhood; so that this product in comparison with others is very great, but to what degree cannot be said precisely. One may however determine from it that spirited and complete husbandry, though it may not from the great expence of it prove profitable in an unfavourable year, yet, considering the great heart the land is left in, it will I apprehend in the long run prove much superior. The trial of this experiment determines me in every future year to form similar ones, that the real value of such methods may be clearly known.

EXPERIMENT N^o 4.

Culture, expences, and produce, of 1 acre, field M, 1765.

CULTURE.

This acre of land was prepared for wheat, with the same view as that in the last experiment. At michaelmas 1763, the culture began, the land was ploughed at that time, twice. The first week in october, 12 loads of horse, hog and cow dung, mixed together, were spread upon it and turned in, with a view to keep it warm and mellow in the winter, that it might be stirred

the easier in the spring, and the weeds grow the more plentifully. The middle of march it was ploughed—again towards the end of the month. The 10th of april, another stirring and a harrowing: ten days after, another, and a harrowing, the land left very fine like barley land. May the 12th I viewed it, and was pleased to find that such numbers of weeds had vegetated, the soil was almost covered with them. I soon after sent the plough in, and gave it the eighth earth, and harrowed it for the third time; in a fortnight after the weeds arose again, but not in great numbers; observing however some docks among them, I sent a boy with a spade and basket in, who brought away all the roots. The middle of june, a small compost of hog dung rotten; good molds and mortar rubbish in equal quantities were spread over it to the amount of 20 cart loads, 30 bushels each, and ploughed in directly. The tenth plowing was given the beginning of august: the end of the same month another. The beginning of september, it received the next, after which 50 bushels of foot and 50 of malt duff were spread on it; and with the seed, ploughed in the 23d. The seed was brought from a strong clay soil 11 miles off, brined, &c. as before. The luxuriance of its growth was I think greater than of the experiment last year, inasmuch that by the end of april it was fed off with sheep twice. The beginning of may, it was hand-hoed, not to cut up the weeds, for there were none, but to thin it.

It stood quite upright to harvest, and was got in without the least rain. The produce 6 qr. and 1 bushel.

EXPENCES.		£.	s.	d.
Thirteen clean earths,	-	0	13	0
Three harrowings,	-	0	1	0
Cost, and labour of manuring thrice,	-	13	13	8
2 bushels of wheat, salt, and lime,	-	0	10	9
Sowing,	-	0	0	6
Herdling,	-	0	1	0
Hand-hoeing,	-	0	12	0
Reaping and harvesting,	-	0	6	7
Threshing,	-	0	15	0
		6	13	6
Rent, &c.	-	1	14	0
		8	7	6
PRODUCE.		£.	s.	d.
6 qr. and 1 bush. at 42s.	-	12	17	3
Expences,	-	8	7	6
Profit,	-	4	9	9

Brought over, profit,	-	-	-	-	-	4	2	9
Ploughing,	-	-	-	-	-	0	13	0
Harrowing,	-	-	-	-	-	0	0	6
Road carting for the manurings,	-	-	-	-	-	1	0	9
Ditto at home,	-	-	-	-	-	0	3	9
Ditto in harvest,	-	-	-	-	-	0	0	6
								<hr/>
								1 18 7
Clear profit,	-	-	-	-	-			<hr/>
								2 11 1

OBSERVATIONS.

This crop in quantity is undoubtedly a very noble one; but I must own, when I found the number of quarters, I expected the profit to be vastly greater. It is true, above fifty shillings *clear* and the land left in such incomparable order must not be thought a slight or trifling advantage upon the whole; it should however be remembered, that these very great crops are liable to be laid with heavy rains before harvest, but the peculiar dryness of the season this year exempted it from that misfortune; a circumstance, that cannot be expected with any regularity in a course of years. The state the land is left in after such husbandry as this must be so good, that with 50s. *per acre* clear profit, I think the inducement to venture the expences very great, in a common course of business; but for this purpose it is very apparent both the ploughing and carting would require very numerous teams upon small farms, and also much wealth in the farmers pocket. But a continuation of these experiments will better discover the degree of benefit to be expected from such very complete husbandry.

EXPERIMENT N^o 6.

Culture, expences, and produce of half an acre, field L, 1765.

This piece of land was begun to be ploughed early in the autumn of 1763; 10 loads of horse dung were spread upon it, and turned in by the first earth; after this it was water-furrowed very completely to lay dry all the winter. In march it received the first spring ploughing; and was stirred for the third time before the end of that month, and well harrowed. It was ploughed three times more in april, and then harrowed twice. Great numbers of weeds were turned by the seventh ploughing, the beginning of may. The first week of june, it was again stirred, and harrowed for the fourth time, after which, 10 loads of compost, hog dung, earth and mortar were spread on it. Four ploughings more were given it by the end of august. The first week in september 25 bushels of malt dust and as much of foot were spread on it, the land sown, and the seed and manure ploughed in by the thirteenth earth.—The end of january it was excessively rank and luxuriant, fed off with sheep bare, and again in april, and as soon as it

sprouted again was well hand-hoed, and thinned. It was reaped the last week in August, all upright, and harvested without rain.

The product 3 quarters 5 bushels.

EXPENCES.

	£.	s.	d.
Thirteen clean earths,	0	6	6
Four harrowings,	0	0	9
Cost of the mortar, &c. &c. and labour on the whole manuring,	1	19	2
One bushel of wheat, (it was not brined or limed),	0	5	0
Sowing,	0	0	3
Herdling,	0	1	0
Hand-hoeing,	0	6	8
Reaping and harvesting,	0	7	0
Threshing,	0	9	0
	3	15	4
Rent, &c.	0	17	0
	4	12	4

PRODUCE.

	£.	s.	d.
3 qr. 5 bushels	7	8	7½
Expences,	4	12	4
Profit, 5l. 12s. 7d. per acre,	2	16	3½
	£.	s.	d.
Ploughing,	0	6	6
Harrowing,	0	0	4½
Road carting for the manuring,	0	10	4½
Ditto at home,	0	1	10½
Ditto in harvest,	0	0	3½
	0	19	4½
Clear profit, 3l. 12s. 4½d. per acre,	1	16	10½

OBSERVATIONS.

This crop is certainly a vast one. Seven quarters, two bushels, from an acre of land, and with no other management than common on methods in perfection, are very great, and such as I have no where within my small experience heard of. It is true, the season was peculiarly favourable; but such seasons do not bring near such crops in the lands generally cultivated; so that excess of product must be charged to the excellence of the culture and manuring: and when we consider the state the land is left in by this noble crop, we shall undoubtedly find the profit immense; for 3l. 13s. 9½d. clear profit.

fit, after a year's fallow, and so much manure and ploughing in the land, is what I believe can never be procured by common management. In the future course of these minutes, the value of the latter will appear, as I shall be attentive to register the succeeding crops. The first is very considerable, and an ample repayment for all the expence and trouble.

OBSERVATIONS ON EXPERIMENTS N^o 5 and 6.

These two experiments, being very similar in preparation of tillage, manuring, hand-hoeing, &c. &c.; and differing only in soil; they are peculiarly proper for stating a comparison between the soils. The one a woodcock loam and the other a gravelly one. The latter I reckoned much the best, and it is so considered by all the neighbouring farmers, who I dare say would freely give considerably more rent for it, than for the other. But these experiments shew that the loam inclinable to clay, is much preferable to that inclinable to gravel. I had an idea before this experiment that the former would, by means of thorough tillage and manuring, yield greater crops: but in the common practice of husbandry, the gravel I believe is abundantly better.

	£.	s.	d.
In these trials the clay loam yielded profit, - - -	3	13	9 $\frac{1}{2}$
Ditto the gravelly, - - -	2	11	1 $\frac{1}{4}$
Superiority of the former, - - -	1	2	7 $\frac{3}{4}$

I do not extend these remarks, as they must be resumed hereafter, when a completer view is taken.

EXPERIMENT N^o 7.

Culture, expences, and produce, of 6 acres, field O, 1765.

CULTURE.

This field yielded barley in 1763 and 1764. Between the 6th and 20th of october, 1764, a compost dunghill to the amount of 90 loads (40 bushels each), consisting of horse and hog dung, cleanings of the yards, and eighteen waggon loads of coal ashes, old mortar, &c. &c. were spread on the barley stubble and ploughed in, half the seed being sown under furrow, and half harrowed in. Part of the seed was raised in the next field, and part from a neighbouring farmer, both very clean of weeds, as I employed some boys and girls to pick it over on a white cloth.

EXPENCES.

	£.	s.	d.
Ploughing, - - -	0	6	0
Harrowing, - - -	0	1	6
	<hr/>		
	Cost		

Cost of, and labour on, the manure,	-	-	-	-	10	4	10 $\frac{1}{2}$
Sowing,	-	-	-	-	0	3	0
Water-furrowing,	-	-	-	-	0	1	4
15 bushels of seed,	-	-	-	-	3	16	6
Picking the seed,	-	-	-	-	0	2	10
Lime, salt, &c.	-	-	-	-	0	2	0
Weeding,	-	-	-	-	0	1	8
Malt for harvestmen ^d ,	-	-	-	-	0	12	0
Harvesting,	-	-	-	-	0	14	8
Threshing, 11 qr.	-	-	-	-	1	2	0

Rent, &c.

PRODUCE.

Received for 10 qr. at 41s.

1 ditto screenings for poultry,

Expences,

Loss,

Ploughing,

Harrowing,

Manuring,

Carting in harvest,

Total loss, 10s. 6 $\frac{1}{4}$ d. per acre,Total expence per acre, 4l. 2s. 10 $\frac{1}{4}$ d.

OBSERVATIONS.

Miserable husbandry this, to sow wheat after two crops of barley! Such indeed, as I never heard of. I was foolishly induced to venture it, on account of providing some wheat straw against winter, relying in good measure on the dunghill: not considering that an ameliorating crop, such as turnips, will hoed with the dung spread on the land, would pay me infinitely better; and, with the profit, not only have bought the straw, but left

^d I give to each of my harvestmen, 3 bushels of malt instead of ale and beer during 5 weeks. I therefore charge to each field harvested, its proportion of the whole.

this field in good order for a crop of spring corn. The exceeding dry summer that ensued, reduced the benefit of the manure to nothing, and produced a crop of 1 qr. 6 bushels *per* acre. My wonder is, that I had half so much. It was white wheat, and the produce exceeding good grain.

EXPERIMENT N^o 8.

Cultivation, expences, and produce, of three acres, field E, 1766.

CULTURE.

In 1759 it was cropped with clover, which was continued 1760. In 1761, wheat. In 1762, fallow. 1763, oats. 1764, clover. 1765, fallow.

The clover land was broken up the 10th of november. The 22d of may it was ploughed a second time. The 17th of june, half ploughed it. This half plowing in suffolk is called ribbling. Ploughed it again the 17th of july. The 26th of august, half plowed it a second time. September 3d, harrowed it fine. The 19th, harrowed it again, a very fine rain having fallen the day before: and on that and the following day ploughed on to the ridge, 5 to a perch, sowing it with 6 bushels of red wheat seed; 4 bushels of which were exceeding fine, grew at Isleham in Cambridgeshire, the rest in the neighbourhood. The season during this fallow was almost a continual burning sun, of course the soil was not so well pulverized as it would have been had more rain fallen. The beginning of june, weeded it by hand. Reaped it the 26th of august. Brought it in the 28th. Threshed the end of october, Produce 4 qr. 5 bushels.

EXPENCES.

	£.	s.	d.
Four clean earths,	2	8	0
Two half ditto,	0	3	0
Two harrowings,	0	2	0
Sowing,	0	1	6
Six bushels of seed,	1	11	6
Water-furrowing,	0	4	6
Deepening the furrows in the winter,	0	1	0
Weeding by hand,	0	10	6
Reaping,	0	12	9
Harvesting,	0	2	0
Harvestmen's malt,	0	2	3
Threshing 4 qr. 7 bushels of wheat,	0	13	6
	6	12	6
Two years rent, &c.	5	2	0
	11	14	6

PRODUCE.

4 qr. 7 bushels of wheat, at 46s.	11	4	6
Loss, 3s. 4d. <i>per</i> acre,	0	10	0

	£.	s.	d.	£.	s.	d.
Ploughing,	1	15	11 $\frac{1}{4}$			
Harrowing,	0	2	3			
Carting in harvest,	1	0	7 $\frac{1}{2}$			
				1	19	9 $\frac{1}{4}$
Loss, 16s. 9 $\frac{1}{2}$ d. per acre,				2	9	9 $\frac{1}{4}$
Total expence per acre, 4l. 11s. 5 $\frac{1}{4}$ d.						

OBSERVATIONS.

Thirteen bushels *per* acre are a poor crop upon summer-fallowed land, and especially considering the field was so well water-furrowed, and weeded by hand. But I am persuaded the scantiness of the crop was owing alone to the excessive wetness of the season. The month of may was scarce any thing but showers, and some excessively heavy. June was very wet; and the spring having been the same, the best of land could not be expected to throw out any great crops. I had a good opportunity to observe, in this field, the great efficacy of deep water-furrows: for a low flat part of it yielded as much and as good as the rest; which was totally owing to the number and depth of the furrows; from the 1st to the 7th of april, the showers of rain were amazingly heavy and frequent, and the same from the 1st till the 13th of May, infomuch that the water stood, in many wheat fields, over the corn, and, I am certain, would have killed half this crop, had they not been made unusually deep.

From the sprouting of the grain, till christmas, there was a very apparent difference between the Cambridgeshire and home seed; the former flourished away much beyond the latter; but I could not afterwards perceive, though I viewed the whole field with the utmost attention, that it was the least superior, which much surprized me.

EXPERIMENT N^o 9.

Cultivation, expences, and produce, of 1 acre, field M, 1766.

This piece was ploughed for the first time in september 1764, when 16 cart loads of horse-dung were turned in. In march, the second earth was given. The 14th, it was harrowed. The 18th it was stirred again, and the 28th the fourth earth was given. The beginning of april it received another, and was well harrowed. It then laid till the middle of may, when the weeds being up pretty thick, they were turned down by the sixth ploughing. The 6th of june, 12 loads of compost, rotten farm yard dung, mixed with moulds, and turned several times, were spread on it, and the next day ploughed in. The middle of july, the 8th plowing was given; the 8th of august, the ninth. And the last week of september, 40 bushels of malt dust,

dust, spread on it, and with the seed ploughed in. The last came from Isleham, in Cambridgeshire. Produce 5 qr. and 11 bushels.

EXPENCES.

	£.	s.	d.
Ten clean earths,	-	0	10
Three harrowings,	-	0	8
Labour in the first manuring,	-	0	4
Ditto in the second,	-	0	8
Cost of the third, and expences, &c. on it,	-	0	18
Two bushels of seed,	-	0	10
Sowing,	-	0	6
Reaping and harvesting,	-	0	6
Threshing,	-	0	11
		3	10
Rent, &c.	-	1	14
		5	4

PRODUCE.

	£.	s.	d.
5 quarters, 1 bushel, at 48s.	-	12	6
Expences,	-	5	4
Profit,		7	1
Ploughing,	1	3	11 $\frac{1}{2}$
Harrowing,	0	1	1 $\frac{1}{2}$
Carting, first manure,	0	3	4
Ditto second,	0	2	3
Ditto third,	0	6	11 $\frac{1}{4}$
Ditto in harvest,	0	0	6 $\frac{1}{2}$
		1	18
Clear profit,		5	2

OBSERVATIONS.

This crop is very profitable; more so than any one hitherto registered. This superiority of profit over former crops of a larger produce is owing to the manure used being less expensive (much of it being my own, not purchased), and also to the wheat selling at a greater price. As to the ploughings being fewer, and the hand-hoeing omitted, I know not how to reckon the crop the more profitable on that account, as it might have yielded more had those operations been performed, though that is not experimentally clear; especially with regard to the hand-hoeing, as many weeds arose, and entirely for want of that operation. These circumstances upon the whole render this crop prodigiously profitable. It is a query, whether the inferiority of

the produce of this experiment to those of similar ones last year, be owing to the want of more tillage and better manure and the hoeing, or to a variation of season: but this will admit of nothing more than conjecture.

EXPERIMENT N^o 10.

Cultivation, expences, and produce, of 4 acres, part of field R, 1767.

November 11th, 1766, ploughed up the clover land, and sowed it with 1 qr. of wheat, harrowed the surface very fine, first with common harrows, then with bush ones. It broke up in very fine order, perfectly crumbly and mellow. August 27th reaped it, carried the 2d of september. Product 7 qr. 5 bush. and 6 bushels of screenings; in all 8 qr. 3 bushels.

EXPENCES.								£.	s.	d.
One ploughing,	-	-	-	-	-	-	-	0	5	6
Harrowing,	-	-	-	-	-	-	-	0	2	6
Seed,	-	-	-	-	-	-	-	2	6	0
Sowing,	-	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	-	0	0	9
Reaping,	-	-	-	-	-	-	-	0	18	0
Harvesting,	-	-	-	-	-	-	-	0	1	6
Harvestmen's malt, &c.	-	-	-	-	-	-	-	0	4	0
Threshing,	-	-	-	-	-	-	-	1	4	6
								5	3	9
Rent, &c.	-	-	-	-	-	-	-	3	8	0
								8	11	9
PRODUCE.								£.	s.	d.
7 qr. 5 bush. wheat,	-	-	-	-	-	-	-	20	2	3
6 bush screenings,	-	-	-	-	-	-	-	0	16	6
								20	18	9
Expences,	-	-	-	-	-	-	-	8	11	9
								12	7	0
Profit <i>per</i> acre, 3 <i>l.</i> 1 <i>s.</i> 9 <i>d.</i>	-	-	-	-	-	-	-			
							£.	s.	d.	
Ploughing,	-	-	-	-	-	-	0	9	9	
Harrowing,	-	-	-	-	-	-	0	7	6	
Carting in harvest,	-	-	-	-	-	-	0	2	2	
							0	19	5	
Profit, 2 <i>l.</i> 16 <i>s.</i> 10½ <i>d.</i> <i>per</i> acre,	-	-	-	-	-	-				
							11	7	7	
Total expence <i>per</i> acre, 2 <i>l.</i> 7 <i>s.</i> 9½ <i>d.</i>										

OBSERVATIONS.

This crop, which is very profitable, is a pregnant proof of the strong effects of good husbandry, and more especially as it happened in a year, in which all corn was found to yield much worse than was ever known: many fields in the neighbourhood produced not above 2 or 3 bushels *per* acre. It is true, the soil of this field is dry and sound, but then it is by no means that which the farmers call good wheat land; being more proper for barley and turneps. But the effect of not over-cropping it, by means of always throwing in turneps and clover between two crops of corn, and manuring the clover upon which this wheat was sown, had power enough to operate in no inconsiderable manner against the season itself; whereas, in all probability, had this field been favoured no more than some of my others, I should have gained a crop not worth the reaping. Let me further remark, that the manuring in this manner, *viz.* upon the clover after the barley is off, is unusual, but I am inclined to believe it much preferable to laying it on directly before the wheat is sown; for any heat that may be prejudicial to the plants must be totally gone, and with it the rankness it is apt to give them, which sometimes threatens a mildewed^e crop, or at least a laid one.

I should remark, that I did not, either for this experiment, or N^o 6 and 7, steep the seed, but only swam it, and dried it with ashes.

EXPERIMENT N^o II.

Culture, expences, and produce, of 8 acres, part of field T, 1767.

CULTURE.

August 13th, &c. 1766, ploughed up the tare stubble, which had been mown for hay. The 19th harrowed it. September 30th ploughed it flat, across, and harrowed it. Between the 2d and 20th of october carried on and spread 221 loads (each 40 bushels) of manure, which is 27 *per* acre.

The 22d &c. ploughed, and sowed it with 2 qr. of wheat. August 28th reaped it, and carried september 12th. Produce 14 qrs. 4 bushels, and 6 bushels of screenings. In all 15 qrs. 2 bushels.

EXPENCES.

	£.	s.	d.
Three ploughings,	-	-	-
Twice harrowed,	-	-	-
2 qrs. of seed,	-	-	-
Manuring,	-	-	-
Carried over,	-	-	-
	8	1	4

^e Manuring warm gravelly lands for wheat, if over done, is a sure way to bring on the mildew; or what the countrymen call *the blast*, and being *smitten*. But as mildews are incrustations of insects, it can effect it only, by causing a quality in the straw, that attracts them.

20]

G R A I N.

Book I.

Brought over,	-	-	-	-	-	8	1	4
151 loads, at 1s. 8d.	-	-	-	-	-	12	11	0
70, at 11 $\frac{1}{4}$ d ^f .	-	-	-	-	-	3	6	8
Sowing,	-	-	-	-	-	0	4	0
Water-furrowing,	-	-	-	-	-	0	7	10
Reaping,	-	-	-	-	-	1	16	0
Harvesting,	-	-	-	-	-	0	13	9
Harvest expences,	-	-	-	-	-	0	8	0
Threshing,	-	-	-	-	-	2	5	9
Carrying out, &c.	-	-	-	-	-	0	11	6

Rent, &c.

30	5	10
6	16	0

37	1	10
----	---	----

PRODUCE.

14 qrs. 4 bushels, at 44s.	-	-	-	-	-	£.	s.	d.
Screenings,	-	-	-	-	-	31	18	0
	-	-	-	-	-	0	15	0

Expences,

32	14	0
37	1	10

Loss, 11s. 1 $\frac{1}{4}$ d. per acre,

4	8	10
---	---	----

Ploughing,

£. s. d.

Harrowing,

Manuring,

Carting in harvest,

Carrying out the corn one journey^b,

2 18 6

0 6 0

3 8 10 $\frac{3}{4}$

0 4 4

0 7 1 $\frac{3}{4}$

7	4	2 $\frac{1}{2}$
---	---	-----------------

Loss, 1l. 9s. 2 $\frac{1}{2}$ d. per acre,

11	13	8 $\frac{1}{2}$
----	----	-----------------

Total expence, 5l. 10s. 10d. per acre.

OBSERVATIONS.

This was the fourth crop since the field was fallowed; but the last of tares for hay, was evidently as beneficial as any fallow could be, and per-

^f 50 Loads of dung, filling, and driving,

70 of clay, digging, filling, and driving,

Horses and repairs,

Turning over twice,

£. s. d.

0 7 2

1 0 6

1 5 0

0 14 0

3	6	8
---	---	---

^{*} When the corn is sold at the barn door, or when back carriage is obtained, nothing is charged; but when, on the contrary, it is attended with any expence, the amount is regularly carried to an account.

^b Carried only 7 miles.

haps more so; for the wheat was throughout the whole season so perfectly clear from weeds, even in that wet year, that it did not require even a common thistling; which is very extraordinary, with a crop so well matured for. And that the corn missed not of nourishment, was palpable from the gallant appearance it made through the season: it was allowed before harvest, to be the finest piece of wheat in the country, and generally guessed at 4, 4 $\frac{1}{2}$, and 5 qrs. *per* acre. I mention these circumstances, to prove that fallowing is by no means so necessary as some imagine, and may be very profitably dispensed with, in favour of ameliorating crops, when the soil is in good order, and the manure carried on, not fresh from the stable or yard, but well mixed in a compost hill. Nor should it be forgotten that much (if not indeed all) of the success, which before attended this field since draining, must have been greatly founded upon that operation. The scantiness of this crop can be attributed to nothing but the extreme unfavourableness of the season. The price would have been larger, had not the sheafs received damaged by the wet in harvest. 1*l.* 9*s.* *per* acre, is a monstrous sum to lose, by a field so thoroughly cultivated.

EXPERIMENT N^o 12.

Culture, expences, and produce, of 3 acres, field U, 1767-

CULTURE.

In 1764 this field was sown with clover for a crop in 1765, but most of the seed failed: however I let it remain by way of a turf to cart on, as I purposed to clay the field; accordingly in february 1765, taking advantage of a frost, I began it, but it was not finished till july following: there were laid on 380 loads of good white clay, each 30 bushels; which formed, when well harrowed, a fine bed of moulds over the whole field. Ploughed it up october 7th 1765, harrowed it the 16th, stirred it again the 2d of june 1766. A third the 27th. July first harrowed it. The 16th ribbled it close across. August 30th ploughed it on to the ridge. October 24th harrowed it. The 25th ploughed and sowed it. September 3d 1767 reaped it. The 14th carried it. Produce 6 qrs. 1 bushels, and 3 bushel of screenings, in all 6 qrs. and 4 bushels.

EXPENCES.						£.	s.	d.
Six ploughings,	-	-	-	-	-	0	18	0
Three harrowings,	-	-	-	-	-	0	1	6
Six bushels of seed ⁱ ,	-	-	-	-	-	1	14	6
Sowing,	-	-	-	-	-	0	1	6
Water-furrowing,	-	-	-	-	-	0	2	10
Carried over,	-	-	-	-	-	2	18	4

ⁱ The expence of the manuring is not charged, as not much virtue can be expected from the clay to the first crop; and if there was any, it would be extravagant to charge the expence of 2 years benefit to the account of one.

							£.	s.	d.	
Brought over,	-	-	-	-	-	-	-	2	18	4
Reaping,	-	-	-	-	-	-	-	0	13	6
Harvesting,	-	-	-	-	-	-	-	0	2	0
Harvest expences,	-	-	-	-	-	-	-	0	3	0
Threshing,	-	-	-	-	-	-	-	1	2	6
							<hr/>			
Rent, &c. two years,	-	-	-	-	-	-	-	4	19	4
							5	2	0	
							<hr/>			
							10	1	4	
PRODUCE.							£.	s.	d.	
6 qr. 1 bush.	-	-	-	-	-	-	-	14	11	5
3 bush. screenings,	-	-	-	-	-	-	-	0	14	0
							<hr/>			
							15	5	5	
Expences,	-	-	-	-	-	-	-	10	1	4
							<hr/>			
Profit, 1 <i>l.</i> 14 <i>s.</i> 8 <i>d.</i> <i>per</i> acre,	-	-	-	-	-	-	-	5	4	1
							£.	s.	d.	
Ploughing,	-	-	-	-	-	-	2	3	10 $\frac{1}{2}$	
Harrowing,	-	-	-	-	-	-	0	3	4 $\frac{1}{2}$	
Carting in harvest,	-	-	-	-	-	-	0	1	7 $\frac{1}{2}$	
							<hr/>			
							2	8	10 $\frac{1}{2}$	
							<hr/>			
Profit, 18 <i>s.</i> 4 $\frac{3}{4}$ <i>d.</i> <i>per</i> acre,	-	-	-	-	-	-	-	2	15	2 $\frac{1}{2}$
							<hr/>			
Total expence <i>per</i> acre, 4 <i>l.</i> 3 <i>s.</i> 4 $\frac{3}{4}$ <i>d.</i>										

OBSERVATIONS.

Considering the three circumstances, of this field never having been hollow drained; the season so remarkably unfavourable; and the weight of two years rent in the account, the above profit is far from being trifling; but the crop like that of N^o 6, did not near answer the expectations formed of it; for during the whole season, it carried so fine a countenance, that less than 5 quarters *per* acre, few even moderate persons would have expected: but from the produce being superior to that of the other field which joins it, and the soil not having the advantage of the drains, nor any manuring with dung, &c. shews that either some benefit was received from the clay, or else that the summer fallow was superior to the preparation by a tare crop; a little might proceed from both; the clay, I apprehend, at least, kept it clean from weeds, for there was scarce one, in the whole field, an effect I never saw from mere fallowing, and especially in a wet season; and the nourishment it received, from the influence of the stirrings, might be greater than the other crop received from the shade of the tares, and the dung.

These,

These however, are but conjectures. The price of this crop would have been much better, but it was several times wet in harvest.

EXPERIMENT N° 13.

Culture, expences, and produce, of 12 acres, field B, 1767.

After the crop of potatoes were ploughed up, and the land left level by harrowing; it was ploughed and sowed with wheat, the 29th &c. of october. Reaped, september 2d. Carried, the 14th. Produce 10 qr. 5 bushels, and 2 qr. 6 bushels of screenings, in all 13 quarters, 3 bushels.

EXPENCES.						£.	s.	d.
One ploughing,	-	-	-	-	-	0	12	0
Three qr. of feed,	-	-	-	-	-	7	0	0
Sowing,	-	-	-	-	-	0	6	0
Water-furrowing,	-	-	-	-	-	0	6	0
Lime and salt, for steep,	-	-	-	-	-	0	5	0
Reaping,	-	-	-	-	-	2	14	0
Harvesting,	-	-	-	-	-	0	7	0
Harvest-expences,	-	-	-	-	-	0	12	0
Threshing,	-	-	-	-	-	2	13	9

Rent, &c.	-	-	-	-	-	14	15	9
	-	-	-	-	-	10	4	0
	-	-	-	-	-	24	19	9

PRODUCE.						£.	s.	d.
10 qr. 5 bushels,	-	-	-	-	-	23	0	3
Screenings,	-	-	-	-	-	2	12	0
	-	-	-	-	-	25	12	3
Expences,	-	-	-	-	-	24	19	9
Profit, 1s. per acre.	-	-	-	-	-	0	12	6

	£.	s.	d.
Ploughing,	1	9	3
Carting in harvest,	0	1	7½
	1	10	10½
The above profit,	0	12	6
Loss per acre, 1s. 6d.	0	18	4½

Total expence per acre, 2l. 4s. 2½d.

OBSERVATIONS.

In a field whose soil was poor, and had not received any manuring, flat and wet, without hollow drains, in a rainy season; and lastly, in a most unfavourable

unfavourable year, it was not to be expected that this crop would turn out of any account; it was not the best of husbandry to venture wheat in it; had I laid it up dry in the winter, and sown it with oats in the spring, I apprehend the profit would have been greater; and yet the crop till harvest looked better than any one of wheat remembered in the field, and was clean of weeds, but there was not vigour enough in the ground to fill the ear even tolerably: I apprehend potatoes to be a very ameliorating crop, but scarce any good effects could result from them when planted so thin as in this field the last year; viz. in rows 4 feet asunder.

EXPERIMENT N^o 14.

Culture, expences, and produce, of 9 acres, field C*, 1767.
Three acres and an half of this field were cropped with beans in 1766: one acre potatoes: and the rest fallow. March the 7th 1766 ploughed the fallow $4\frac{1}{2}$ acres. June the 21st stirred it again. July 22d the 3d ploughing. August 2d harrowed it. September 1st ploughed it into the ridge. October 29th ploughed and sowed it.

October 11th ploughed up the bean and potatoe acres. November 4th harrowed them, and then rolled them with a two-horse large roller. The 5th ploughed them again. The 7th harrowed them. The 11th ploughed and sowed. I thiftled these acres in June.

Reaped the whole September 22d. Carried the 25th. Product of the whole field 10 qrs. 1 bushel, and 2 qrs. 1 bushel of screenings, in all 12 qrs. 2 bushels. Of which 9 qrs. (8 of the best and 1 of screenings) were from the fallow; $4\frac{1}{2}$ acres 2 qrs. 5 bushels (1 qr. 5 bush. of the best, and 1 qr. of screenings) from the bean land; and 5 bushels (4 of the best, and 1 of screenings) from the potatoe acre.

EXPENCES.

	£.	s.	d.
Ploughing,	-	1	16 0
Harrowing and rolling,	-	0	3 0
Seed, 18 bushels,	-	4	17 0
Sowing,	-	0	4 6
Water-furrowing,	-	0	12 9
Thiftling $4\frac{1}{2}$ acres,	-	0	7 6
Reaping,	-	2	0 6
Harvesting,	-	0	5 0
Harvest expences,	-	0	9 0
Threshing,	-	2	9 0
Carrying, &c.	-	0	7 0
Rent, &c.	-	11	9 6
		25	0 9

PRODUCE.

PRODUCE.				£.	s.	d.
10 qrs. 1 bushel,	-	-	-	22	0	2
2 ditto— 1 ditto screenings,	-	-	-	1	17	6
				<u>23</u>	<u>17</u>	<u>8</u>

Loss 2s. 6 $\frac{1}{4}$ d. per acre, - - - - - 1 3 1

	£.	s.	d.
Ploughing,	4	7	9
Harrowing,	0	9	3
Rolling,	0	0	5
Carting in harvest,	0	4	9 $\frac{1}{2}$
Carrying,	0	14	3 $\frac{1}{2}$
		<u>5</u>	<u>16</u> <u>6</u>

Total loss 14s. 7d. per acre, - - - - - 6 19 7

Total expence per acre, 3l. 8s. 7d.

Account of the 4 $\frac{1}{2}$ acres fallow.

EXPENCES.				£.	s.	d.
Five ploughings,	-	-	-	1	2	6
One harrowing,	-	-	-	0	1	0
9 bushels of seed,	-	-	-	2	8	6
Sowing,	-	-	-	0	2	3
Water-furrowing,	-	-	-	0	6	4
Reaping,	-	-	-	1	0	3
Harvesting,	-	-	-	0	2	6
Harvest expences,	-	-	-	0	4	6
Threshing,	-	-	-	1	16	0
Carrying, &c.	-	-	-	0	5	0
				<u>7</u>	<u>8</u>	<u>10</u>
Rent, &c.	-	-	-	7	13	0
				<u>15</u>	<u>1</u>	<u>10</u>

PRODUCE.				£.	s.	d.
8 qr. of wheat,	-	-	-	17	12	0
Screenings,	-	-	-	0	18	0
				<u>18</u>	<u>10</u>	<u>0</u>
Expences,	-	-	-	15	1	10
Profit, 15s. 2d. per acre,	-	-	-	3	8	2

	£.	s.	d.
Ploughing,	2	14	10
Harrowing,	0	1	8 $\frac{1}{2}$
Carting in harvest,	0	2	5 $\frac{1}{4}$
Carrying,	0	8	10
	<hr/>		
Clear profit 1d. per acre,	3	7	9 $\frac{1}{2}$
	0	0	4 $\frac{1}{2}$

Account of the 3 $\frac{1}{2}$ acres of bean land.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	10	6
Two harrowings, and one rolling,	0	1	6
7 bushels of seed,	1	17	4
Sowing,	0	3	6
Water-furrowing,	0	4	0
Thistling,	0	5	6
Reaping,	0	15	9
Harvesting,	0	2	0
Harvest expences,	0	3	6
Threshing,	0	10	6
Carrying, &c.	0	1	6
	<hr/>		
Rent, &c.	4	15	7
	2	19	6
	<hr/>		
	7	15	1

PRODUCE.

	£.	s.	d.
1 qr. 5 bushels of wheat,	3	11	3
Screenings,	0	18	0
	<hr/>		
	4	9	6
Loss 18s. 10d. per acre,	3	5	7

	£.	s.	d.
Ploughing,	1	5	7
Harrowing,	0	2	7 $\frac{1}{2}$
Rolling,	0	0	1 $\frac{3}{4}$
Carting,	0	1	10 $\frac{3}{4}$
Carrying,	0	5	4 $\frac{1}{2}$
	<hr/>		
Total loss 1l. 8s. 11d. per acre,	1	15	7 $\frac{1}{2}$
	5	1	2 $\frac{1}{2}$

Account of the potatoe-land acre.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Two harrowings, and one rolling,	0	0	6
2 bushels of seed,	0	10	8
Sowing,	0	0	6
Carried over,	0	14	8

	£.	s.	d.
Brought over,	0	14	8
Water-furrowing,	0	2	5
Thistling,	0	2	0
Reaping,	0	4	6
Harvesting,	0	0	6
Harvest expences,	0	1	0
Threshing,	0	2	6
Carrying, &c.	0	0	6
	1	8	1
Rent, &c.	0	17	0
	2	5	1

PRODUCE.

	£.	s.	d.
4 bushels of wheat, ^k	0	16	8
Screenings,	0	1	6
	0	18	2

Loss,	1	6	11
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	£.	s.	d.
Ploughing,	0	7	3 $\frac{1}{4}$
Harrowing,	0	0	9
Rolling,	0	0	1
Carting in harvest,	0	0	6 $\frac{1}{2}$
Carrying,	0	1	6
	0	10	2 $\frac{1}{4}$

Loss,	1	17	1 $\frac{1}{4}$
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Total expence *per* acre, 2*l.* 15*s.* 3 $\frac{1}{4}$ *d.*

Gain by the fallow <i>per</i> acre,	0	15	2
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Loss by the bean land,	0	18	10
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The former superior by	1	14	0
------------------------	---	----	---

Gain by the fallow,	0	15	2
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Loss by the potatoe land,	1	6	11
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The former superior by	2	2	1
------------------------	---	---	---

Loss by the bean land,	0	18	10
------------------------	---	----	----

By the potatoe ditto,	1	6	11
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The former superior by	0	8	1
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^k The quality of this corn was extremely bad.

Gain by the fallow *per* acre,

Loss by the bean land,

The former superior by

Gain by the fallow,

Loss by the potatoe land,

The former superior by

Loss by the potatoe land,

Ditto by the bean land,

The latter superior by,

£. s. d.

0 0 1

1 8 11

1 9 0

0 0 1

1 17 11

1 17 21

1 17 11

1 17 11

1 8 11

0 8 21

OBSERVATIONS.

It is obvious from this account, that the new husbandry in the management of beans by no means equals a fallow in preparing the land for wheat; at least as far as this experiment extends; and that notwithstanding the weighty expence on the latter, of a year's rent extraordinary. As to the meanness of that part of the crop which followed potatoes, it is not to be wondered at; as nothing was done to keep them clean, nothing could be expected but a wretched produce: indeed those farmers who depend on lucky seasons, to make amends for want of industry and judicious management, will meet with very few years attended by such a strange effect: almost throughout this course of experiments, the returns from the soil have proved pretty nearly in proportion to the degree of culture, &c. it received; some exceptions there must be; but they are not very material, and happen in years remarkably unfavourable. The small profit on the fallow part of this experiment, can be attributed to no other cause, than the badness of the season; for, considering the preparation, the return by no means answered.

£. s. d.

The reader by turning to the experiment will find, that

the profit by the beans was *per* acre,

From which if we deduct the loss by the wheat, or

1 18 10

0 18 10

The remainder,

1 0 0

Is the profit in the two years; which is near 5s. superior to the profit by the fallow wheat, in these 2 years. From which it appears, that although the fallow is the better preparer, yet the greatest profit arises from the two crops; and a loss of near 5s. *per* acre, sustained by not sowing the fallow part of the field with beans in 1766.

EXPE-

EXPERIMENT N^o 15.

Culture, expences, and produce, of 1 acre, part of field L*, 1767.

The preceding stubble ploughed up the middle of september 1765; 20 loads of farm-yard dung, once turned over, being first spread upon the land; about the end of the same month, it was ploughed out; and in october in again, and the land water-furrowed for winter. This method of ploughing the dung in and out before winter, I had not before tried. March 11th it received the first spring ploughing; the 22d it was stirred again; and the first week in april for the 6th time, and harrowed at the same time. May 10th it was ploughed again, and harrowed, being left very fine, like barley land in good order. The first week in june a middling crop of weeds had risen over it, which were turned in by the eighth ploughing. Soon after, 12 cart loads of compost, containing equal parts of coal ashes, hog-dung, street cleanings, and town-rubbish together, and clay, turned over three times, were spread on the land, and ploughed in. The tenth earth was given the first week in august. September the 4th it received the eleventh. The middle of the same month 60 bushels of foot were spread on it, which laid about 5 days; then the land was sown and ploughed: and afterwards water-furrowed.

The young wheat was twice fed off by the end of april. The first week in may it was hand-hoed; but the weeds rising again, it was hoed a second time directly. The beginning of august most of it was laid flat by rain. It was reaped the 29th. The produce 4 qrs. and 1 bushel.

EXPENCES.					£.	s.	d.
Twelve clean earths,	-	-	-	-	0	12	0
Two harrowings,	-	-	-	-	0	0	4
Labour in first manuring,	-	-	-	-	0	5	9
Cost of, and labour &c. on the second,	-	-	-	-	1	2	2
Ditto on the third,	-	-	-	-	1	11	6
2 bushels of seed,	-	-	-	-	0	12	9
Lime, salt, &c.	-	-	-	-	0	1	0
Water-furrowing twice,	-	-	-	-	0	2	3
Sowing,	-	-	-	-	0	0	6
Hand-hoeing the first time,	-	-	-	-	0	14	0
Ditto the second,	-	-	-	-	0	11	0
Reaping,	-	-	-	-	0	5	6
Harvesting,	-	-	-	-	0	3	4
Threshing,	-	-	-	-	0	16	8
					6	18	9
Rent, &c.	-	-	-	-	1	14	0
					8	12	9
							PRO-

Produce						£.	s.	d.
4 qrs. and 1 bushel,	-	-	-	-	-	10	2	0
Expences,	-	-	-	-	-	8	12	9
Profit,	-	-	-	-	-	1	9	3
Ploughing,	-	-	-	-	-	1	9	3
Harrowing,	-	-	-	-	-	0	0	9
First manuring,	-	-	-	-	-	0	6	3
Second,	-	-	-	-	-	1	5	2 $\frac{1}{4}$
Third ditto,	-	-	-	-	-	0	7	1 $\frac{3}{4}$
Carting in harvest,	-	-	-	-	-	0	0	6 $\frac{1}{2}$
The above profit,	-	-	-	-	-	3	9	1 $\frac{1}{2}$
Loss,	-	-	-	-	-	1	9	10 $\frac{1}{2}$

OBSERVATIONS.

This experiment proves that the utmost attention to every part of good husbandry will not secure an exemption from those casualties that come from seasons. It was not the crop being laid that alone damaged it: from the remarks I made on the ears of this piece, as well as several other crops, I did not expect it to turn out any thing like the preceding ones of the same nature: the bulk of straw was immense, which in no sort of crop is a good sign; however, it would certainly have proved more beneficial, had it remained upright; for the being laid, shriveled the grain, and much damaged it. There were some circumstances that gave me reason to expect more than usual in this experiment; the ploughings were more numerous than in some of the others, the manure excellent, and the hand-hoeing repeated, which it had never been before.

EXPERIMENT N° 16.

Culture, expences, and produce, of half an acre, field L *, 1767.

This piece I determined to try what wheat I could gain by tillage alone, and in the utmost perfection. With this view, I trench-ploughed it the first week in october 1765, with two ploughs, one with two horses, and that followed by another of four, and a man laying on the plough beam to make it cut the deeper: by these means it was ploughed 14 inches deep. This operation was again performed in the same manner in march 1766, which turned up the old earth buried before. The last week in april it was done in the same manner a third time, which buried the old soil again, and brought up the new. May the 14th it was commonly ploughed and harrowed: and again the last week. June the 13th a third time, and harrowed

rowed again. In july it was ploughed three times more, and harrowed it five. In august it was also stirred three times. The first week in september once and harrowed. The first week in october it was ploughed and sown. The whole tillages being three trench-ploughings, eleven common ones, and nine harrowings. It was hand-hoed once in march, but the luxuriance of the corn was not so great as to induce me to feed it. It was reaped the same time as the last experiment, much laid, though not equally so with that. The produce 2 qrs. and 1 bushel.

EXPENCES.

	£.	s.	d.
Three trench-ploughings,	-	0	12
Eleven common ditto,	-	0	5
Nine harrowings,	-	0	1
One bushel of seed,	-	0	6
Sowing,	-	0	0
Water-furrowing twice very deep,	-	0	3
Hand-hoeing,	-	0	6
Reaping,	-	0	2
Harvesting, &c.	-	0	1
Threshing,	-	0	7
		2	6
Rent, &c.	-	0	17
		3	3

PRODUCE.

	£.	s.	d.
2 qrs. and 1 bushel,	-	5	6
Expences,	-	3	3
Profit,	-	2	2

	£.	s.	d.
Trench-ploughing,	-	0	16
Common ditto,	-	0	13
Harrowing,	-	0	1
Carting in harvest,	-	0	0
		1	11
Clear profit,	-	0	10

OBSERVATIONS.

The full effect of this experiment, like that of the last, is not to be gained, on account of the mischief done by the weather in laying it; but the inferiority of the expence of tillage to that of manure renders it the most profitable crop; but I apprehend manure to be of the most powerful nature, both from the superior luxuriance of the wheat of the first experiment in the winter,

ter, and also from its being so much laid; and in such seasons as these, when land is in thorough good heart, all additions of the most beneficial nature will be sure to render the crop so much the worse; for this reason I have always had other crops in my eye for experiments on the comparative value of tillage and manure, as all those of corn are so much subject to this disaster of being laid, such I mean as potatoes, cabbages, turneps, &c. &c.

EXPERIMENT N^o 17.

Culture, expences, and produce, of 1 acre, field M*, 1767.

This acre received its first ploughing about the middle of september 1765. The beginning of october, it was stirred again, and in a few days after manured with 16 loads of farm-yard dung *per* acre: which was turned in directly. The fourth earth was given about the 12th of march, and harrowed the day after: it received another by the end of the month. The 20th of april it had been stirred seven times, and it was then harrowed well. It was so left till the first week in june, that the seeds of weeds might all have time to vegetate; the crop of them was pretty thick, and they were then turned down. The end of the same month it received an ample manuring of 20 loads of a compost, consisting of equal parts of rotten ditch-emptyings, chalk, hog dung, and mortar rubbish, turned over and well mixed together. It was ploughed in directly upon spreading. In july it received three more earths: in august two; and in september two. The first week in october, the seed was sown and ploughed in, without any other manuring. It arose as luxuriant as any crop I ever had; and was fed off twice by the end of march. In april it was well hand-hoed. Reaped the last week in august, but excessively laid. The produce 4 qrs. and 4 bushels.

EXPENCES.

	£.	s.	d.
Seventeen clean earths,	0	17	0
Three harrowings,	0	0	9
Labour on first manuring,	0	3	6
Cost &c. of the chalk and mortar, and labour on the second manuring,	1	16	0
Seed,	0	11	8
Sowing,	0	0	6
Herdling,	0	1	0
Hand-hoeing,	0	12	0
Reaping,	0	4	9
Harvesting, &c.	0	3	0
Threshing,	0	19	0
	5	9	2
Rent, &c.	11	4	0
	7	3	2
PRODUCE.			

		PRODUCE.		
		£.	s.	d.
4 qrs. and 4 bushels; at 49s.		11	0	6
Expences,		7	3	2
Profit,		3	17	4
		£.	s.	d.
Ploughing,		2	1	5 $\frac{1}{2}$
Harrowing,		0	1	1 $\frac{1}{2}$
Carting in the first manuring,		0	5	0
Ditto the second,		2	1	11 $\frac{3}{4}$
Ditto in harvest,		0	0	6 $\frac{1}{2}$
			4	10
The above profit,		3	17	4
Loss,			0	12
				9

OBSERVATIONS.

Upon these experiments it must certainly be remarked by the reader, that excellent crops are gained, and yet many of them are attended with loss: this is a disadvantage, to which such spirited husbandry is open; and the better the husbandry, the worse probably will be the crop, in case of unfavourable seasons: but could any invention be discovered for keeping the corn from being laid, I have no doubt but the best mode of culture would regularly be attended with the greatest profit. I should remark that 4 qrs. and 4 bushels are this year a very great crop, and much beyond the common produce.

EXPERIMENT N^o 18.

Culture, expences, and produce, of 1 acre, field M*, 1767.

CULTURE.

This piece was thrice ploughed in the autumn of 1765, the last of which turned in 25 loads of farm-yard dung. The first week in march it received the first spring ploughing, and was harrowed twice. Between the 20th and 27th of the same month it was stirred and harrowed again. In april it was ploughed three times, and harrowed twice. The 28th of may it had its ninth ploughing, many weeds being then turned in. The middle of june, 15 loads of town manure, consisting of mortar, coal-ashes, hog-dung, horse-dung, and street cleanings, mixed together, were spread on the land, and ploughed in. In july it received three more earths. In august two. In september two. October 8th 40 bushels of malt dust were sown over it; and with the seed (which was swam, brined, and salted, &c.) turned in by the 18th ploughing. By the end of april it was fed off with sheep three times.

The beginning of may it was hand-hoed; a month before harvest it was all beaten to the ground; reaped the last week in august. Produce 5 qrs.

EXPENCES.						£.	s.	d.
Eighteen ploughings,	-	-	-	-	-	0	18	0
Five harrowings,	-	-	-	-	-	0	1	6
Labour in the first manuring,	-	-	-	-	-	0	5	6
Ditto in the second, and cost,	-	-	-	-	-	2	9	6
Ditto in the third,	-	-	-	-	-	1	6	9
Seed, 2 bushels, &c.	-	-	-	-	-	0	11	0
Sowing,	-	-	-	-	-	0	0	6
Herdling,	-	-	-	-	-	0	1	0
Hand-hoeing,	-	-	-	-	-	0	13	6
Reaping and harvesting,	-	-	-	-	-	0	6	9
Threshing,	-	-	-	-	-	1	2	0
						<hr/>		
Rent, &c.	-	-	-	-	-	7	16	0
						1	14	0
						<hr/>		
						9	10	0

PRODUCE.						£.	s.	d.
5 qrs. at 47s.	-	-	-	-	-	11	15	0
Expences,	-	-	-	-	-	9	10	0
Profit,	-	-	-	-	-	2	5	0

	£.	s.	d.
Ploughing,	2	3	10½
Harrowing,	0	1	10½
Carting the first manure,	0	7	9¾
Ditto the second,	2	14	8½
Ditto in the third,	0	7	1¾
Ditto in harvest,	0	0	6½
<hr/>			5 15 11½
The above profit,	-	-	2 5 0
<hr/>			3 10 11½

OBSERVATIONS.

It is certainly very peculiar husbandry to lose 3*l.* 10*s.* 11½*d.* *per* acre, by a crop of 5 qrs. and sold at a good price; and it undoubtedly is a lesson to us, never to regard the product *per* acre in quantity of corn, but in that of money alone. If a man boasts of 5 qrs. *per* acre, he will at once in most companies be supposed to have proved his point, whether it be the goodness of his land, the

the excellence of his culture, or the nature of his manures : but assertions of this kind are nothing satisfactory ; it is the profit alone that ought to be our guide. Several of the preceding crops were very poor ones, but yet advantageous—this, very good, but very unprofitable. The great power of the manure, much of it of an admirable quality, forced the crop prodigiously ; and gave such a bulk of straw, notwithstanding the feeding, that even flight rains bent it down, and succeeding ones quite pressed it ; in that situation, common crops receive the fatal wound by weeds shooting through the corn ; but the means of destroying those enemies in these experiments were too efficacious to leave the crop open to such attacks, though down it continued like the preceding ones of the same kind), free from weeds. Another circumstance, which equally struck me, was the freedom of these crops from the rust, smut, and mildew. This acre was a good deal mildewed ; but not more so than many other crops in the common management ; and the rest of them very clean from such attacks. I should remark here, as I did before, that the great point wanting is, to keep the corn up ; had this for instance escaped laying, I have little doubt but it would have yielded a much greater produce, perhaps half as much again.

General OBSERVATIONS upon the preceding EXPERIMENTS.

It will be necessary, for the sake of a complete view of these experiments, to throw them into general tables, under the heads of Expences, Produce, Profit, and Loss ; and then into separate ones, according to the soil and other circumstances ; first,

EXPENCES.				£.	s.	d.
Expences <i>per</i> acre of Experiment	N ^o 1,	-	-	3	7	0 ¹ / ₂
	N ^o 2,	-	-	2	0	4 ¹ / ₂
	N ^o 7 ¹ ,	-	-	4	2	10 ¹ / ₄
	N ^o 8,	-	-	4	11	5 ¹ / ₂
	N ^o 10,	-	-	2	7	9 ¹ / ₂
	N ^o 11,	-	-	5	10	10
	N ^o 12,	-	-	4	3	4 ¹ / ₂
	N ^o 13,	-	-	2	4	2 ¹ / ₂
	N ^o 14, at large,	-	-	3	8	7
	Ditto fallow part,	-	-	4	2	1 ¹ / ₂
	Ditto the bean land,	-	-	2	14	6
	Ditto the potatoe land,	-	-	2	15	3 ¹ / ₄
General average of these sums, 3 <i>l.</i> 9 <i>s.</i> 0 ¹ / ₄ <i>d.</i>						

¹ The small experiments of perfect husbandry are too much exceptions to be mixed with these common ones.

PRICES of the Product.

	£.	s.	d.
1763,	1	1	2
1764,	1	19	0
1765,	2	1	0
1766,	2	6	0
1767,	2	4	0

General average of these prices, 1*l.* 18*s.* 2 $\frac{1}{4}$ *d.*

From this it appears that the average expence *per* acre is exactly equal to 1 qr. 6 bushels, and 2 pecks of wheat, at the above average price.

	PRODUCE.	Q.	B.	P.
Experiment N ^o 1,	-	3	2	0 <i>per</i> acre.
2,	-	1	7	0
7,	-	1	6	0
8,	-	1	5	0
10,	-	2	0	3
11,	-	1	7	1
12,	-	2	1	1
13,	-	1	0	3
14,	-	1	2	3
Fallow,	-	2	0	0
Beans,	-	0	6	0
Potatoes,	-	0	5	0
1 Q. 5 B. 2 P.	the average of these crops.			

	Q.	B.	P.
Average saving crop,	-	1	6 2
Produce,	-	1	5 2
Average loss,	-	0	1 0

PROFIT and Loss.

	Profit.	£.	s.	d.
Experiment N ^o 1,	-	0	0	10 <i>per</i> acre.
2,	-	1	15	2
10,	-	2	16	10 $\frac{3}{4}$
12,	-	0	18	4 $\frac{3}{4}$
Fallow,	-	0	0	1
Average profit, 1 <i>l.</i> 2 <i>s.</i> 3 <i>d.</i> $\frac{1}{4}$				

Loss.

	Loss.	£.	s.	d.
Experiment N ^o 7,	-	0	10	6 $\frac{1}{4}$
8,	-	0	16	9 $\frac{1}{2}$
11,	-	1	9	2 $\frac{1}{2}$
13,	-	0	6	1 $\frac{1}{2}$
14,	-	0	14	7

Beans,

	Beans,	Potatoes,	Average losfs, 1/1. os. 5½d.	£.	s.	d.	per acre.
	-	-	-	1	8	11	
	-	-	-	1	17	1½	
	-	-	-				

Totals of Losfs.

Experiment N ^o 7,	-	-	-	3	3	2½
8,	-	-	-	2	9	9½
11,	-	-	-	11	13	8½
13,	-	-	-	0	18	4½
14,	-	-	-	6	19	7½
				25	4	8½

Ditto of Profit.

Experiment N ^o 1,	-	-	-	0	4	11
2,	-	-	-	15	17	0½
10,	-	-	-	11	7	7
12,	-	-	-	2	15	2½
				30	4	8½
Losfs,	-	-	-	25	4	8½

Profit in the whole on cultivating 60 acres of wheat, }
 or per acre 1s. 8d. }

5 0 0

The trifling amount of this profit, which does not near pay the interest of the money employed upon the land, is very discouraging to employ fields in the production of this crop, in a mere common system of management. One most important conclusion is to be drawn from it, viz. that a perfect culture (according to common modes) had better be practised over 5 acres of land than an imperfect one over 60. Five good acres of wheat would undoubtedly pay as much as these 60, and more; and the risque and interest of money in one case bear no proportion to those of the other. It is very clear, these crops were not upon an average properly managed; that the land did not receive ploughings and manure sufficient to render it profitable: both these articles may be extended too far; land may be made too good *for this crop*, but a medium there must be, and it shall be the aim of future trials to discover that medium, no point being more important^m. From viewing the fields of many neighbouring farmers, I am clear that many of their crops did not exceed the above. But one year can be called a *good* one; one was middling; the rest extreme unfavourable seasons. Five

^m Schemes of such experiments were drawn up for certain soils to be executed; but leaving the farm, broke (on that land) the design. Had I staid, I would not have given so imperfect a work to the publick.

dry hot years would alone, without any variation of management, have converted this 5% to 100%. I shall next divide these fields according to soil.

Gravelly Loam.

Experiment N^o 2.^a

7.

10.

Clayey Loam.

Experiment N^o 1.

8.

11.

12.

13.

14.

PRODUCE.

Experiment N^o 2,

7,

10,

On 3 acres,

Which is *per* acre, 1Q. 7B. 1P.Experiment N^o 1,

8,

11,

12,

13,

14,

On 6 acres,

Which is *per* acre, 1Q. 7B.

The products being so equal is remarkable.

PROFIT and LOSS.

Experiment N^o 2, Profit,

10. ditto,

7, Loss,

Profit on 3 acres,

Which is *per* acre, 1l. 7s. 2d.

^a A few of the fields are part one, and part the other, in this case I assign it to that which most abounds.

Experiment N^o 1, Profit,

	£.	s.	d.	per acre.
12,	0	10	0	
13,	0	18	4 $\frac{1}{2}$	
14,	0	19	2 $\frac{1}{2}$	
8, Loss,	0	16	9 $\frac{1}{2}$	
11,	1	9	2 $\frac{1}{2}$	
13,	0	6	1 $\frac{1}{2}$	
14,	0	14	7	
Profit,	3	6	8 $\frac{1}{2}$	
	0	19	2 $\frac{1}{2}$	
Loss on 6 acres,	2	7	5 $\frac{1}{2}$	

Which is *per* acre, 7s. 1 $\frac{1}{2}$ d.

The gravelly soil in this account carries the superiority greatly; but (though not without its uses) it is not absolutely decisive, as there is an inequality in the number of the fields; but in the manuring, the clay had the advantage, 2 to 1. Next it will be necessary to divide them into Manured and Not manured.

Manured.

	Q.	B.	P.	per acre.
Experiment N ^o 1,	3	2	0	
7,	1	6	0	
11,	1	7	1	
Product of three acres,	6	7	1	

Which is *per* acre, 2Q. 2B. 1P.

Not manured.

	Q.	B.	P.	per acre.
Experiment N ^o 2,	1	7	0	
8,	1	5	0	
10,	2	0	3	
12,	2	1	1	
13,	1	0	3	
14,	1	2	3	
Product of 6 acres,	10	2	2	

Which is *per* acre, 1Q. 5B. 3P.

Superiority of the manured, 4B. 2P.

This account is clear in favour of manuring, which is yet stronger when it is considered that only one in three of the manured fields was fallowed.

PROFIT

PROFIT and Loss.

Manured.				£.	s.	d.
Experiment N ^o 7, Lofs,	-	-	-	0	10	6 $\frac{1}{4}$
11,	-	-	-	1	9	2 $\frac{1}{2}$
				1	19	8 $\frac{3}{4}$
1. Profit,	-	-	-	0	0	10
				1	18	10 $\frac{3}{4}$
Lofs on 3 acres,						
Which is <i>per</i> acre, 12s. 11 $\frac{1}{4}$ d.						
Not manured,				£.	s.	d.
Experiment N ^o 2, Profit,	-	-	-	1	15	2
10,	-	-	-	2	16	10 $\frac{3}{4}$
12,	-	-	-	0	18	4 $\frac{3}{4}$
				5	10	5 $\frac{1}{2}$
8, Lofs,	-	-	-	0	16	9 $\frac{1}{2}$
13,	-	-	-	0	6	1 $\frac{1}{2}$
14,	-	-	-	0	14	7
				1	17	6
Profit on 6 acres,				3	12	11 $\frac{1}{4}$
Which is <i>per</i> acre,				0	12	1 $\frac{3}{4}$
Lofs on the manured,				0	12	11 $\frac{1}{2}$
Superiority of the unmanured,				1	5	1 $\frac{1}{4}$

It is not from this account to be concluded that manuring of land for wheat is a bad custom in general; it only proves that, in many instances, the expence exceeds the benefit. There are some husbandmen so very sanguine in favour of their own method, that it has been asserted that manuring alone is sufficient to balance all other circumstances: these calculations are not determinate enough to found absolute conclusions upon; but they have their use in answer to such false ideas.

In the next place, I shall view these crops in respect to the courses they are thrown into. First, those which succeed a fallow. Secondly, such as follow crops supposed to be ameliorating. Thirdly, such as follow exhausting ones.

EXPENCES.

Fallow.				£.	s.	d.
Experiment N ^o 1,	-	-	-	3	7	0 $\frac{3}{4}$
8,	-	-	-	4	11	5 $\frac{1}{4}$
12,	-	-	-	4	3	4 $\frac{3}{4}$
Carried over,				12	1	10 $\frac{3}{4}$

	£.	s.	d.	
Brought over,	12	1	10 $\frac{3}{4}$	
14, Part,	4	2	1 $\frac{1}{2}$	per acre.
Expende of 4 acres,	16	4	0 $\frac{1}{4}$	

Which is *per* acre 4*l.* 1*s.*

Ameliorating crops.

Experiment N ^o 2, Clover,	2	0	4 $\frac{1}{2}$
10, Ditto,	2	7	9 $\frac{1}{2}$
11, Tares for hay,	5	10	10
12, Potatoes,	4	3	4 $\frac{3}{4}$
14, Part beans,	2	14	6
Ditto potatoes,	2	15	3 $\frac{1}{4}$
Expende of 6 acres,	19	12	2 $\frac{1}{4}$

Which is *per* acre, 3*l.* 5*s.* 4 $\frac{1}{4}$ *d.*

Exhausting one.

N^o 7, Barley, 4 2 10 $\frac{1}{4}$

If those which were manured (as some will object to the comparison on that account) are left out, the account will stand thus:

Fallow.

Experiment N ^o 8,	4	11	5 $\frac{1}{4}$
12,	4	3	4 $\frac{3}{4}$
14, Part,	4	2	1 $\frac{1}{2}$
Expende on 3 acres,	12	16	11 $\frac{1}{2}$

Which is *per* acre, 4*l.* 5*s.* 7 $\frac{3}{4}$ *d.*

Ameliorating.

Experiment N ^o 2,	2	0	4 $\frac{1}{2}$	per acre.
10,	2	7	9 $\frac{1}{2}$	
12,	4	3	4 $\frac{3}{4}$	
14, Part,	2	14	6	
Ditto,	2	15	3 $\frac{1}{4}$	
Expende of 5 acres,	14	1	4 $\frac{1}{4}$	

Which is *per* acre, 2*l.* 16*s.* 3 $\frac{1}{4}$ *d.*

The latter cheaper by,

1 9 4 $\frac{1}{2}$

PRODUCE.

Fallow.

	Q.	B.	P.	
Experiment N ^o 1,	0	2	0	per acre.
8,	1	5	0	
Carried over,	4	7	0	

	Q.	B.	P.	
Brought over,	-	-	-	-
Experiment N° 12,	-	-	-	-
14, Part,	-	-	-	-
Product of 4 acres,	-	-	-	-

Q. B. P.

4 7 0

per acre.

2 1 1

2 0 0

9 0 1

Which is per acre 2Q. 2B.

	Q.	B.	P.	
Experiment N° 2,	-	-	-	-
10,	-	-	-	-
11,	-	-	-	-
12,	-	-	-	-
14, Part,	-	-	-	-
Ditto,	-	-	-	-

Ameliorating.

Q. B. P.

1 7 0

per acre.

2 0 3

1 7 1

2 1 1

0 6 0

0 5 0

Product of 6 acres,

9 3 1

Which is per acre, 1Q. 4B. 2P.

	Q.	B.	P.	
Experiment N° 7,	-	-	-	-

Exhausting.

Q. B. P.

1 6 0

If the manured ones are thrown out, then the account will stand thus:

	Q.	B.	P.	
Experiment N° 8,	-	-	-	-
12,	-	-	-	-
14, Part,	-	-	-	-
Product of 3 acres,	-	-	-	-

Fallow.

Q. B. P.

1 5 0

2 1 1

2 0 0

5 6 1

Which is per acre, 1Q. 7B. 1P.

	Q.	B.	P.	
Experiment N° 2,	-	-	-	-
10,	-	-	-	-
12,	-	-	-	-
14, Part,	-	-	-	-
Ditto,	-	-	-	-

Ameliorating.

Q. B. P.

1 7 0

2 0 3

2 1 1

0 6 0

0 5 0

Product of 5 acres,

7 4 0

Which is per acre, 1Q. 4B.

	Q.	B.	P.	
Fallow,	-	-	-	-
Ameliorating,	-	-	-	-
Former superior by,	-	-	-	-

1 7 1

1 4 0

0 3 1

This

This comparison is of some consequence; and though the superiority is small, yet ought it not to be slighted.

PROFIT and LOSS.

	Fallow.	£.	s.	d.	
Experiment N° 1, Profit,	-	0	0	10	per acre.
12,	-	0	8	4 $\frac{3}{4}$	
14,	-	0	0	1	
8, Loss,	-	0	19	3 $\frac{3}{4}$	
	-	0	16	1 $\frac{1}{2}$	
Profit on 4 acres,	-	0	3	2 $\frac{1}{4}$	

Which is per acre, 9 $\frac{1}{4}$ d.

Ameliorating.

	£.	s.	d.	
Experiment N° 2, Profit,	1	15	2	per acre.
10,	2	16	10 $\frac{3}{4}$	
12,	0	18	4 $\frac{3}{4}$	
11, Loss,	1	9	2 $\frac{1}{2}$	
14, Part,	1	8	11	
Ditto,	1	17	1 $\frac{1}{4}$	
	4	15	2 $\frac{3}{4}$	

Profit on 6 acres,

Which is per acre, 2s. 6 $\frac{1}{4}$ d.

Exhausting.

	£.	s.	d.	
Experiment N° 7, Loss,	0	10	6 $\frac{1}{4}$	per acre.

The proportions, setting aside the manured acres, are as follows:

	Fallow,	£.	s.	d.	
Experiment N° 12, Profit,	-	0	18	4 $\frac{3}{4}$	per acre.
14, Part,	-	0	0	1	
8, Loss,	-	0	18	5 $\frac{3}{4}$	
	-	0	16	1 $\frac{1}{2}$	
Profit on 3 acres,	-	0	2	4 $\frac{1}{4}$	

Which is per acre, 9d.

Ameliorating.

	£.	s.	d.	
Experiment N° 2, Profit,	1	15	2	
10,	2	16	10 $\frac{3}{4}$	
12,	0	18	4 $\frac{3}{4}$	
	5	10	5 $\frac{1}{2}$	

	£.	s.	d.
Experiment N ^o 14, Part, loss,	1	8	11
Ditto,	1	17	1 $\frac{1}{4}$
	<hr/>		
	3	6	0 $\frac{1}{4}$
Profit on 5 acres,	2	4	5 $\frac{1}{4}$
Which is <i>per</i> acre, 8s. 10 $\frac{1}{2}$ d.	<hr/>		
Ameliorating,	0	8	10 $\frac{1}{2}$
Fallow,	0	0	9
	<hr/>		
Superiority of the former,	0	8	1 $\frac{1}{2}$

This comparison, which is upon the whole open but to very few objections, is in a good measure decisive for sowing wheat after ameliorating crops, rather than after a fallow; with good management, I am clear it will always in a course of years prove the most advantageous method. Some of these crops, particularly N^o 2 and 10, are remarkably profitable, more so than any other common wheat ones I have had—beyond any fallow ones.

RECAPITULATION.

	£.	s.	d.
Average expence <i>per</i> acre of all the preceding crops,	3	9	0 $\frac{1}{4}$
	<hr/>		
	Q.	B.	P.
Average product,	1	5	2
Ditto on gravel,	1	7	1
Ditto on clay,	1	7	0
	<hr/>		
	£.	s.	d.
General average profit,	0	1	8
Profit on the gravel,	1	7	2
Loss on the clay,	0	7	10 $\frac{3}{4}$
	<hr/>		
	Q.	B.	P.
Average product of the manured crops,	2	2	1
Ditto not manured,	1	5	3
	<hr/>		
	£.	s.	d.
Average loss on the manured,	0	12	11 $\frac{1}{2}$
Ditto profit on the unmanured,	0	12	1 $\frac{3}{4}$
Average expence of the fallowed crops	4	1	0
Of those which followed ameliorating ones,	3	5	4 $\frac{1}{4}$
Ditto that followed an exhausting one,	4	2	10 $\frac{1}{4}$
The manured crops rejected in these articles, they are,	<hr/>		
	£.	s.	d.
Fallowed crops,	4	5	7 $\frac{3}{4}$
After ameliorating ones,	2	16	3 $\frac{1}{4}$
	<hr/>		
	Q.	B.	P.
Average product of the fallowed crops,	2	2	0
After ameliorating ones,	1	4	2
Ditto exhausting,	1	6	0

The manured crops rejected in these articles, they are,

	Q.	B.	P.
Fallowed ones,	-	-	-
After ameliorating ones,	-	-	-
	£.	s.	d.
Average profit on the fallowed,	0	0	9½
Ditto after ameliorating ones,	0	2	6½
Loss, exhausting,	0	10	6½

The manured crops rejected, these articles stand thus,

Fallowed ones,	0	0	9
Ameliorating, &c.	0	8	10½

Having in this manner drawn the crops commonly managed, into one point of view; it is necessary next to do the same with those in which perfection of tillage and manure were exerted, to try their utmost force. First, under the article of

	EXPENCES.	£.	s.	d.	
Experiment N ^o 3,	-	8	6	2	per acre.
4,	-	8	7	6	
6,	-	9	4	8	
9,	-	5	4	11	
15,	-	8	12	9	
16,	-	6	7	6	
17,	-	7	3	2	
18,	-	9	10	0	
Expence of 8 acres,	-	62	16	8	

Which is *per* acre, 7*l.* 17*s.* 1*d.*

	PRODUCE.	Q.	B.	P.	
Experiment N ^o 3,	-	4	4	0	per acre.
4,	-	6	1	0	
6,	-	7	2	0	
9,	-	5	1	0	
15,	-	4	1	0	
16,	-	4	2	0	
17,	-	4	4	0	
18,	-	5	0	0	
Product of 8 acres,	-	40	7	0	

Which is *per* acre, 5*Q.* 3*P.*

PROFIT

Profit and Loss.				£.	s.	d.	
Experiment N ^o 4, Profit,	-	-	-	2	11	1 $\frac{1}{4}$	per acre.
6,	-	-	-	3	13	9 $\frac{1}{2}$	
9,	-	-	-	5	2	11 $\frac{1}{4}$	
16,	-	-	-	1	1	11 $\frac{1}{2}$	

				12	9	10	
£. s. d.							
3, Loss,	-	-	-	1	6	6 $\frac{1}{2}$	
15,	-	-	-	1	19	10 $\frac{1}{2}$	
17,	-	-	-	0	12	9	
18,	-	-	-	3	10	11 $\frac{1}{2}$	
				7	10	1 $\frac{1}{2}$	

Profit on 8 acres, - - - 4 19 8 $\frac{1}{2}$

Which is *per acre*, 12s. 5 $\frac{1}{2}$ d.

It will in the next place be requisite to state the account according to soil.

Gravelly Loam.				Q. B. P.		
PRODUCE.						
Experiment N ^o 3,	-	-	-	4	4	0
4,	-	-	-	6	1	0
9,	-	-	-	5	1	0
17,	-	-	-	4	4	0
18,	-	-	-	5	0	0
Product of 5 acres,	-	-	-	25	2	0

Which is *per acre*, 5Q.

Profit and Loss.				£.	s.	d.
Experiment N ^o 4, Profit,	-	-	-	2	11	1 $\frac{1}{4}$
9,	-	-	-	5	2	11 $\frac{1}{4}$
				7	14	1
3, Loss,	-	-	-	1	6	6 $\frac{1}{2}$
17,	-	-	-	0	12	9
18,	-	-	-	3	10	11 $\frac{1}{2}$
				5	10	3
Profit on 5 acres,	-	-	-	1	3	10

Which is *per acre*, 4s. 9d.

Clayey

Clayey Loam.

PRODUCE.

					Q.	B.	P.	
Experiment N° 6,	-	-	-	-	7	2	0	per acre.
15,	-	-	-	-	4	1	0	
16,	-	-	-	-	4	2	0	
Product of 3 acres,	-	-	-	-	15	5	0	

Which is *per* acre 5Q. 1B. 2P.

PROFIT and LOSS.

					£.	s.	d.	
Experiment N° 6, Profit,	-	-	-	-	3	13	9 $\frac{1}{2}$	per acre.
16,	-	-	-	-	1	1	11 $\frac{1}{2}$	
15, Loss,	-	-	-	-	4	15	9.	
Profit on 3 acres,	-	-	-	-	2	15	10 $\frac{1}{2}$	

Which is *per* acre, 18s. 7 $\frac{1}{2}$ d.

					Q.	B.	P.	
Gravel product,	-	-	-	-	5	0	0	
Clay ditto,	-	-	-	-	5	1	2	
Latter superior by,	-	-	-	-	0	1	2	
Gravel profit,	-	-	-	-	0	4	9	
Clay ditto,	-	-	-	-	0	18	7 $\frac{1}{2}$	
Latter superior by,	-	-	-	-	0	13	10 $\frac{1}{2}$	

The expences *per* acre of this method, 7*l.* 17*s.* 1*d.* are extremely high; a farmer must be very strong indeed, to expend near eight hundred pounds upon an hundred acres of corn before he receives a shilling. In such husbandry large sums must be expended upon small tracts of land. The average product of 5 qrs. is by no means, take a long course of years into the account, adequate to such a vast expence; and this reminds the reader of the great unfavourableness of so many of these seasons, which (the circumstance of great quantities being so apt to be laid in bad ones considered) perhaps render these five quarters equal to seven or eight. The same observation is consequently applicable to the profit, which is certainly very trifling for such a vast expenditure. The superiority of the clayey to the gravelly loam is remarkable; and proves strongly, that the farmers of this country are mistaken in the *unbounded* preference they give the gravels. I say *unbounded*, because the preference which is connected only with common management is, I apprehend, judicious and well founded.

Comparison between the commonly conducted experiments, and the expensive ones.

	£.	s.	d.
Improved husbandry, average expence,	7	17	1
Common husbandry average expence,	3	9	0 $\frac{1}{4}$
Excess of the former,	4	8	0 $\frac{1}{4}$
<hr/>			
	Q.	B.	P.
Improved husbandry, average produce,	5	0	3
Common ditto,	1	5	2
Superiority of the former,	3	3	1
<hr/>			
	£.	s.	d.
Improved husbandry, average profit,	0	12	5 $\frac{1}{2}$
Common ditto, ditto,	0	1	8
Superiority of the former,	0	10	9 $\frac{1}{2}$
<hr/>			
Improved husbandry, average profit of 3 best crops,	3	15	11 $\frac{1}{2}$
Common ditto, ditto,	1	16	9 $\frac{3}{4}$
Superiority of the former,	1	19	1 $\frac{3}{4}$
<hr/>			
Improved husbandry, average loss of three worst crops,	2	5	9 $\frac{1}{2}$
Common ditto, ditto,	1	11	8 $\frac{3}{4}$
The latter better by	0	14	0 $\frac{1}{4}$

From this comparison it appears,

First, that the improved husbandry is doubly more expensive than the common.

Secondly, that it produces in quantity three times more than the common.

Thirdly, that the profit attending it is seven times as great as that of the common.

Fourthly, that, bad years alone taken, it is more unprofitable than the common.

The most important of these points is the superiority in profit. That upon both methods in the preceding experiments, it is true, is very small; but yet the proportion remains in small sums, as well as great; and one mode being seven times over better than another is a prodigious superiority: but another circumstance (not in this set of experiments reducible to proof) is the state of the land after the two methods. In one it is exhausted and full of weeds, in the other in vast heart and quite clean: it would occasion a general

neral confusion to introduce here the proofs of this assertion; it will appear hereafter sufficiently clear from experiment. From both these reasons therefore, the superiority of the direct profit, and state the land is left in, there is the clearest proof of the improved husbandry being the most beneficial. If it appears so in a series of years upon the whole very unfavourable; and several of them peculiarly so, in being extremely wet, and consequently pernicious to great crops by laying them; how much more so would it appear in the same number of years of a middling nature, which these it is universally known were not?

Upon the whole, this general maxim is deducible from these experiments, That it is much more profitable to cultivate a few acres in a masterly manner, than many in the common way. This, it may be said, is a very common idea, and needed no experiments to prove: I can only reply that I do not trade in ideas, but in proofs. Opinions may be common without its being *known* whether they are true or false: and I apprehend it is as *useful* experimentally to prove them so, as to establish new ones, however brilliant and original.

These circumstances are evident, might be infinitely multiplied; and it is equally manifest, that, in every experiment, the result accurate it must be. And that for very obvious reasons. It is much easier to find a secret alike than 200, divided to give scores can twice ever be found the same; to that ~~these experiments may be conclusive for the land alone it is conducted on;~~

works to be performed at the same time. The most important kind; not is a possible large experiments for all the which is just nothing, because a change of year is another variation, and of

SECRET. II.

CULTURE and PRODUCE in the new method.

THE reader can scarcely expect that any experiments in this mode of sowing are upon as large a scale as those of the preceding section; my fortune would by no means allow me to venture so far into the road of ideal husbandry; for as to experiments for my guide, never had I read one that was the least satisfactory when I began my own trials, nor do I think they abound much at present. However, this series of trials will prove much more useful in their accuracy, than the experience of a whole farm could possibly allow. Large experiments are certainly very important; but if a man throws 30 or 40 or 100 acres at once into the drill culture, I will answer for it, whatever may be his fortune, that the method will not have that genuine and complete advantage necessary for experiments that are to be laid before the publick. The object is too large, the number of hands necessary (and dextrous ones) too great, and the constant requisite attention too fatiguing. I can assure the reader, that I do not insert one experiment, however small, but is as clear in every particular, and in many more so, than would 100 acres be; and the conclusions to be drawn as applicable to common practice. It may be said that there are variations in the soil, which do not come into the account of so small a piece as a rood, or half acre. Allowing this may be the case, is it not the same with the largest field? If the conclusion be clear from a trial of 20 acres, will it be attended with the same consequences in another, although contiguous, 20 acres? In a well-cultivated country, scarce a field is to be found that has its exact counterpart,

The foil exactly of the same level, depth, and nature.

The exposition precisely the same: an high hedge in one field may intercept a mildew coming with a wind; the other field damaged for want of it.

The preceding crops, tillage to each, manuring, &c. &c. &c. all to have been the same, and performed at the same time.

These

These circumstances, it is evident, might be infinitely multiplied; and it is equally plain, that the *larger* the experiment, the *less* accurate it must be: and that for very obvious reasons. It is much easier to find 2 acres alike than 200: indeed 10 or 20 acres can scarce ever be found the same; so that a large experiment may be conclusive for the land alone it is conducted on; which is just nothing, because a change of year is another variation, and of the most important kind: nor is it possible in large experiments for all the works to be performed at the same time.

Suppose a gentleman tells me, that in order to be particularly genuine he will reject all small pieces of land, and try an experiment of seed or tillage, &c. &c. on 40 acres of barley all ready for sowing; he divides it into 10 pieces of 4 acres each, for so many variations; now in this case he must either have 10 teams, ploughs, harrows, &c. &c. and men equally skilful to all, or his trial will not be worth twopence: if he does a part at a time, letting 6 hours intervene between one field and another, a heavy shower of rain upon the well-prepared barley land will occasion a difference sufficient to balance upon many soils every other point: and consequently all his conclusions must be erroneous. For these reasons I am always diffident of giving full credit to *experiments of comparison* that are tried *in large*: I well know from my own experience, as well as the reason of the thing, that a greater accuracy attends small than large tracts of land. The reader will excuse this digression. As the following series of trials are mostly upon roods, half acres, and acres, it was necessary to say something in answer to those who argue against such small experiments: and I shall only add, that there is an accuracy in the following experiments, which I defy any man in England to equal, who forms his trials upon ten aced pieces; provided it is an old inclosed and cultivated country.

EXPERIMENT N^o I.

Culture, expences, and produce, of half an acre, field L*, 1764.

CULTURE.

This piece was ploughed once in the autumn of 1762, and once more by lady day 1763; from that time to september, it received three more ploughings, the last of which struck it into steatches or beds, 5 feet wide. The middle of that month, these were arched up, by what is called in Suffolk *upsetting*, that is, the plough begins at the top of the ridge, and finishes on both sides in the old furrows. It was then harrowed fine, and drilled with wheat in three rows on the top of each ridge, eight inches asunder; the drills were struck by lines with hoes, the seed sowed by hand, and covered with rakes; it took three pecks.

But here I should remark, that, as many of these experiments were sown with a drill plough, at a vastly less expence, I shall charge this, as if the seed

was likewise shed by that implement: if I was not to pursue this method, the observations upon the whole series would be totally delusive.

After the wheat was sown, deep and sufficient water-furrows were cut through the piece to lay it dry for the winter.

The middle of march the rows were hand-hoed with hoes $4\frac{1}{2}$ inches wide, and the outsidcs of the outward rows also hoed for a few inches: The last week in the same month, the first horse-hoeing was given with a common plough by a bout, turning a furrow from the wheat, and throwing a ridge up in the middle of the interval: but, from this operation, I found that the spaces left, of 3 feet 8 inches, were too narrow for a bout; beginning at first near the wheat, I found the plough buried it so, that I was forced to order it to leave a stripe 6 inches broad, which diminished the space to 2 feet 8 inches. When it was finished, the water-furrows were scowered out again, as heavy spring rains without this precaution would destroy the crop. The first week in may, it was horse-hoed a second time, by splitting the little ridge before left in the middle of the intervals; but this, from the narrowness of the space, was forced to be done by three cuts of the plough. In june, the rows were again hand-hoed, as before. The end of the same month, another horse-hoeing was given, reversing the last. The middle of july, it was horse-hoed again, splitting the ridge twice in a place, to open the furrow deep. It was harvested very favourably; the produce 1 qr. 1 bushel.

EXPENCES.							£.	s.	d.
Six ploughings,	-	-	-	-	-	-	0	3	0
Two harrowings,	-	-	-	-	-	-	0	0	6
Drilling,	-	-	-	-	-	-	0	0	$1\frac{3}{4}$
Seed,	-	-	-	-	-	-	0	3	$4\frac{1}{2}$
Water-furrowing three times,	-	-	-	-	-	-	0	5	0
Two hand-hoeings,	-	-	-	-	-	-	0	5	6
Five horse-hoeings,	-	-	-	-	-	-	0	1	8
Reaping,	-	-	-	-	-	-	0	2	6
Harvesting, &c.	-	-	-	-	-	-	0	1	1
Threshing,	-	-	-	-	-	-	0	3	10
							1	6	$7\frac{1}{4}$
Rent, &c.	-	-	-	-	-	-	0	17	0
							2	3	$7\frac{1}{4}$
PRODUCE.							£.	s.	d.
1 qr. 1 bush. at 42s.	-	-	-	-	-	-	2	7	3
Expences,	-	-	-	-	-	-	2	3	$7\frac{1}{4}$
Profit 7s. $3\frac{1}{2}$ d. per acre,	-	-	-	-	-	-	0	3	$7\frac{3}{4}$

Ploughing,	£.	s.	d.
Harrowing,	0	3	0
Drilling,	0	10	2½
Horse-hoeing,	0	1	0½
Carting in harvest,	0	10	1½
	—	—	—
The above profit,	0	3	7½
Loss per acre, is. 7½d.	0	0	9½

OBSERVATIONS.

This first trial of my drilling succeeded much better than I expected; from the appearance of the corn all the year, which was by no means favourable, I apprehended the crop would not be above 2 or 3 bushels at most; and finding the corn in a greater proportion to the straw than common, gave me hope, that something might in time be made of this method. I should mark, that it was kept perfectly clean from all weeds; and that the horse-hoeings were numerous enough to preserve the intervals in good tilth. They were all given with two horses.

EXPERIMENT N^o 2.

Culture, expences, and produce, of half an acre, field L*, 1764.

CULTURE.

This piece was ploughed in the autumn of 1762. Twice more in april 1763. Again in may. And between that time and michaelmas three times more; the last earth threw it into steatches 5 feet broad. It was then arched up, and harrowed fine; and drilled by hand, 2 rows at 1 foot asunder on the top of each bed. Taking 3 pecks of seed. After sowing, it was thoroughly water-furrowed. About the last week in march, it received its first hoeing, which turned a furrow on each side from the corn, throwing up a ridge in the middle of the interval and water-furrows scowered. In a fortnight after, the rows were hand-hoed with hoes 9 inches wide, not only in the space between, but also 5 or 6 inches on the outsides, so as to leave the rows on a stripe of well-cut and loosened earth. The middle of may, it was horse-hoed again; and hand-hoed a fortnight after: I should remark that my bargain with hand-hoers is always to hand-weed the rows themselves, as they go along.—The last horse-hoeing reversed the work of the first. And the third, which was given the first week in july, did the same by the second. The fourth was performed in about a week after, leaving an open trench in the middle of the interval; and the corn banked up as it were. I should observe, that the effect of these horse-hoeings and hand-hoeings also was always visible in a day or two after, in deepning the green of the plants, and increasing their growth. The wheat was reaped the

the first week in september. It did not ripen so soon as the common corn.
Product, 1 qr. 4 bushels.

EXPENCES.		£.	s.	d.
Eight ploughings,	- - - - -	0	4	0
Two harrowings,	- - - - -	0	0	6
Drilling,	- - - - -	0	0	1 $\frac{1}{4}$
Seed,	- - - - -	0	3	4
Water-furrowing three times,	- - - - -	0	4	9
Two hand-hoeings,	- - - - -	0	4	9
Four horse-hoeings,	- - - - -	0	1	4
Reaping,	- - - - -	0	3	0
Harvesting,	- - - - -	0	1	8
Threshing,	- - - - -	0	4	6
		<hr/>		
Rent, &c.	- - - - -	0	17	0
		<hr/>		
		2	4	11 $\frac{1}{4}$

PRODUCE.		£.	s.	d.
1 qr. 4 bush. at 42s.	- - - - -	3	3	0
Expences,	- - - - -	2	4	11 $\frac{1}{4}$

	£.	s.	d.
	0	18	0 $\frac{1}{4}$
Ploughing,	0	4	0
Harrowing,	0	0	2 $\frac{1}{4}$
Drilling,	0	0	0 $\frac{3}{4}$
Horse-hoeing,	0	0	10
Carting in harvest,	0	0	1 $\frac{1}{4}$
<hr/>			5 2 $\frac{1}{4}$

Clear profit, 1l. 5s. 7d. per acre,	0	12	9 $\frac{1}{4}$
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OBSERVATIONS.

This crop proved very profitable; for above 25s. per acre from land that is left in excellent order for another crop is a considerable return. There can be no doubt but the land after this method is in much better order than after common wheat crops, either for repeating the drilling, or sowing spring corn, &c. broad cast. I have hope, from the success of this crop, and particularly from observing that none of it was beaten down by the weather, to carry the produce, by means of manure and great tillage, much higher than this.

EXPE-

EXPERIMENT N^o 3.

Culture, expences, and produce, of half an acre, field L*, 1764.

CULTURE.

This piece was ploughed once in 1762, autumn. In the following spring it was stirred again. From thence till michaelmas it received four earths more, the latter of which threw it into steatches of 5 feet, upon which 8 cart loads of mortar, rubbish and coal ashes were spread; then another ploughing turned in the manure, and arched up the beds at the same time. It was harrowed and drilled in double rows 1 foot, with 3 pecks of seed; and well water-furrowed.

The first week in april it received the first horse-hoeing: the operations of each need not be specified (unless for variations) as they were the same as before; the water-furrows were fresh opened, and the hand-hoeing given in about ten days. During the summer it received three more horse-hoeings and one hand-hoeing. Nothing could be finer than the appearance of this corn through the spring and the fore part of the summer, the rows of a thick luxuriance, and much higher than any common wheat: I had great hope of a fine crop; but was much disappointed, when I found before harvest, that the stalks and leaves were of an unwholesome speckled appearance, slightly mildewed I apprehend; and although the straw was in large quantities for drilled corn, yet the ears were very poor. It was not reaped until the end of september. The product, 7 bushels.

EXPENCES.

	£.	s.	d.
Seven earths,	0	3	6
One harrowing,	0	0	2
Drilling,	0	0	1 1/4
Seed,	0	3	4
Water-furrowing thrice,	0	5	0
Two hand-hoeings,	0	5	6
Four horse-hoeings,	0	1	4
Reaping,	0	3	10
Harvesting,	0	2	1
Threshing,	0	3	2
	1	8	0 1/4
Rent, &c.	0	17	0
	2	5	0 1/4

PRODUCE.

	£.	s.	d.
7 bushels, at 38s.	1	13	3

The

The expences,	-	-	-	-	-	-	2	5	0 $\frac{1}{4}$
Produce,	-	-	-	-	-	-	1	13	3
Loss, 1l. 3s. 7 $\frac{1}{2}$ d. per acre,	-	-	-	-	-	-	0	11	9 $\frac{1}{4}$
						£.	s.	d.	
Ploughing,	-	-	-	-	-	0	3	6	
Harrowing,	-	-	-	-	-	0	0	1	
Drilling,	-	-	-	-	-	0	0	0 $\frac{3}{4}$	
Horse-hoeing,	-	-	-	-	-	0	0	10	
Carting in harvest,	-	-	-	-	-	0	0	1 $\frac{3}{4}$	
Carting, and expences of manuring,	-	-	-	-	-	2	7	1	
									2 11 8 $\frac{1}{2}$
Total loss, 6l. 7s. 0 $\frac{1}{2}$ d. per acre,	-	-	-	-	-				3 3 6 $\frac{1}{4}$

OBSERVATIONS.

This experiment is a remarkable one ; those above registered, of the same year, were either profitable, or the loss trifling ; this, which was well manured, turned out much the worst : now I apprehend it must have been owing to the omission of feeding off the green wheat in the spring ; for, although the crop was not beaten down by the weather, yet the luxuriance of it might occasion that rankness in the straw, which attracts the mildew : supposing there is such a quality, as I have reason to believe there is : however, this experiment opens a field for new enquiries, which must be conducted with an eye to this event.

EXPERIMENT N^o 4.

Culture, expences, and produce, of a rood, field L*, 1764.

CULTURE.

Ploughed once in autumn 1762. Again in april 1763, and five times more by the end of august. The first week in september, it received its eighth ploughing, which completed the design, of laying it on a perfect level. It was then harrowed three times, to make it very fine, and then it was drilled in equally distant rows, 1 foot asunder. Taking $\frac{1}{2}$ bushel of seed. It was water-furrowed every way, and very deep, to keep it dry, as this kind requires in common to be ridged on that account. In april it was thoroughly hand-hoed and hand-weeded; and again the beginning of june. In september it was reaped; the produce, 11 bushels.

EXPENCES.

EXPENCES.						£.	s.	d.
Eight ploughings,	-	-	-	-	-	0	2	0
Three harrowings,	-	-	-	-	-	0	0	2
Drilling,	-	-	-	-	-	0	0	6
Carried over,	-	-	-	-	-	0	2	8

Brought over,	£.	s.	d.
Seed,	0	2	8
Water-furrowing,	0	3	0
Hand-hoeing,	0	2	3
Reaping,	0	6	0
Harvesting, &c.	0	1	6
Threshing,	0	0	8
	0	4	6
	1	0	7
Rent, &c.	0	8	6
	1	9	1
PRODUCE.			
11 bushels, at 42s.	£.	s.	d.
Expences,	2	17	9
	1	9	1
Profit, 5l. 14s. 8d. per acre,	1	8	8
	£.	s.	d.
Ploughing,	0	2	9
Harrowing,	0	0	1½
Drilling,	0	0	0½
Carting in harvest,	0	0	0½
	0	2	2¼
Clear profit, 5l. 5s. 9d. per acre,	1	6	5¼

OBSERVATIONS.

The profit of this crop is extraordinarily great; indeed the very principles of its culture must in reason produce a great crop; for the hand-hoes, by having a free space to strike into, cut much deeper than in the broad cast hand-hoeing; and none of the land being unoccupied, it would have been a wonder had the crop been bad. But I should remark, that all the success depended entirely upon the water-furrows being so deep, and plentiful; for as the land was so exactly flat for the sake of drilling and hoeing, the crop would otherwise have been quite poisoned by the wet.

EXPERIMENT N° 5.

Culture, expences, and produce, of half an acre, field M*, 1764.

CULTURE.

This piece was ploughed for the first time in autumn 1762. The following spring, it was stirred again. The last week in June a third time, and harrowed. In September two more, the last of which threw it into

beds of 5 feet wide; another soon after arched them up; three rows of wheat were then drilled upon the crown of each bed, 8 inches asunder. In april the first horse-hoeing was given: and the end of the same month, the rows were well hand-hoed and weeded. In may it was again both horse-hoed and hand-hoed. In june horse-hoed again; and the first week in july again, for the last time. It was reaped the end of august. The product, 2 qrs. and 1 bushel.

EXPENCES.							£.	s.	d.
Eight ploughings,	-	-	-	-	-	-	0	4	0
Two harrowings,	-	-	-	-	-	-	0	0	3
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{1}{4}$
Three pecks of seed,	-	-	-	-	-	-	0	4	0
Horse-hoeing four times,	-	-	-	-	-	-	0	1	4
Two hand-hoeings,	-	-	-	-	-	-	0	8	0
Reaping,	-	-	-	-	-	-	0	2	3
Harvesting,	-	-	-	-	-	-	0	1	2
Threshing,	-	-	-	-	-	-	0	5	8
							1	6	9 $\frac{3}{4}$
Rent, &c.	-	-	-	-	-	-	0	17	0
							2	3	9 $\frac{3}{4}$

PRODUCE.							£.	s.	d.
2 qrs. and 1 bushel, at 41s.	-	-	-	-	-	-	4	7	0
Expences,	-	-	-	-	-	-	2	3	9 $\frac{3}{4}$
Profit, 4l. 6s. 4 $\frac{1}{2}$ d. per acre,	-	-	-	-	-	-	2	3	2 $\frac{1}{4}$
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	-	-	0	0	2 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	0 $\frac{1}{4}$
Horse-hoeing,	-	-	-	-	-	-	0	0	10
Carting in harvest,	-	-	-	-	-	-	0	0	1 $\frac{1}{4}$
							0	5	2 $\frac{3}{4}$
Clear profit, 3l. 15s. 11d. per acre,	-	-	-	-	-	-	1	17	11 $\frac{1}{2}$

OBSERVATIONS.

This profit is very considerable, and shews that the drill culture will succeed upon this soil as well as upon the clayey loam. This indeed was my previous opinion; for, besides saving the great expence of water-furrowing, this soil I have generally observed to pay well for tillage. All the operations of horse and hand-hoeing, and weeding with the latter, were well and

care-

carefully performed; and the young wheat exhibited a very pleasing prospect of accurate husbandry, as did indeed all these drilled crops; and this land as well as the other was left in a fine loose state, excellently prepared for future crops.

EXPERIMENT N^o 6.

Culture, expences, and produce, of half an acre, field M*, 1764.

CULTURE.

First ploughed in autumn 1762. Again in the following march. A third time in april, and harrowed twice. A fourth in may; and 4 times more by the middle of september. The eighth ploughing threw it into steatches 5 feet broad. It was arched up by the 9th, and harrowed. Upon the crown of each steatch 2 rows of wheat were drilled, 1 foot asunder. About the middle of march it was horse-hoed for the first time; and soon after hand-hoed. These operations were repeated in april, and the horse-hoeing in may, and also in june for the last time. It made a very healthy fine appearance to harvest time. Was reaped the first week in september. Product, 1 qr. 3 bush.

EXPENCES.

	£.	s.	d.
Nine ploughings,	0	4	6
Three harrowings,	0	0	3
Drilling,	0	0	1 $\frac{1}{4}$
Seed 3 pecks,	0	4	0
Four horse-hoeings,	0	1	4
Two hand-hoeings,	0	5	0
Reaping,	0	2	3
Harvesting,	0	0	9
Threshing,	0	3	0
	<hr/>		
Rent, &c.	0	17	0
	<hr/>		
	1	18	2 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
1 qr. 3 bush. at 41s.	2	16	4 $\frac{1}{2}$
Expences,	1	18	2 $\frac{1}{4}$
	<hr/>		
Profit, 1l. 16s. 3 $\frac{1}{2}$ d. per acre,	0	18	1 $\frac{1}{4}$
	<hr/>		
Ploughing,	0	4	6
Harrowing,	0	3	0 $\frac{1}{4}$
Drilling,	0	0	0 $\frac{3}{4}$
	<hr/>		
Carried over,	0	7	7 $\frac{1}{2}$

Brought over,	-	-	-	-	0	7	7½
Horse-hoeing,	-	-	-	-	0	0	10
Carting in harvest,	-	-	-	-	0	0	1½
							<hr/>
					0	8	6½
Clear profit, 19s. 2d. per acre,	-	-	-	-	0	9	7
							<hr/>

OBSERVATIONS.

This is another very profitable drilled crop; but the inferiority of the produce and profit to those of N° 5 should make one suppose that 3 rows upon this soil are more advantageous than two; but this is another point which must be referred for proof to the event of future experiments.

EXPERIMENT N° 7.

Culture, expences, and produce, of a rood, field M*, 1764.

CULTURE.

Ploughed like the preceding pieces in autumn 1762. Summer-fallowed through the year 1763; receiving by the middle of september seven earths, the last threw it into steatches 5 feet broad; a compost of coal ashes, foot, and malt dust, of each equal quantities, to the amount of 5 loads were then spread upon it, and ploughed in at arching up the beds. A peck and half of wheat were then drilled on the tops of the steatches in 2 rows of 1 foot asunder. The plants looked very healthy and well through the winter, but did not carry such a luxuriant countenance as I expected from the excellence of the manure. The first horse-hoeing was given the second week in march, and about the end of the month the rows were hand-hoed. In april these works were both repeated at different times, which I think much more advantageous than doing them quick upon one another. In may the third horse-hoeing was given, and the last week in june the fourth. To my surprize it ripened without any damage or distemper, like the manured crop of L*, and was reaped the last week in august. The product, 5 bush. and 2 pecks.

EXPENCES.							£.	s.	d.
Eight ploughings,	-	-	-	-	-	-	0	2	0
One harrowing,	-	-	-	-	-	-	0	0	1
Cost and expences of the manure,	-	-	-	-	-	-	2	0	9
Drilling,	-	-	-	-	-	-	0	0	0¾
Seed,	-	-	-	-	-	-	0	2	0
Four horse-hoeings,	-	-	-	-	-	-	0	0	8
Two hand-hoeings,	-	-	-	-	-	-	0	3	0
Reaping,	-	-	-	-	-	-	0	1	0
									<hr/>
Carried over,	-	-	-	-	-	-	2	9	6¾

Brought over,	-	-	-	-	-	-	2	9	6 $\frac{1}{2}$
Harvesting,	-	-	-	-	-	-	0	0	5
Threshing,	-	-	-	-	-	-	0	2	3
									<hr/>
Rent, &c.	-	-	-	-	-	-	2	12	2 $\frac{1}{2}$
							0	8	6
									<hr/>
							3	0	8 $\frac{1}{2}$
PRODUCE.									
5 bush. and 2 pecks, at 42s.	-	-	-	-	-	-	1	8	10 $\frac{1}{2}$
									<hr/>
Expences,	-	-	-	-	-	-	3	0	8 $\frac{1}{2}$
Produce,	-	-	-	-	-	-	1	8	10 $\frac{1}{2}$
									<hr/>
Loss, 6l. 7s. 5d. per acre,	-	-	-	-	-	-	1	11	10 $\frac{1}{2}$
									<hr/>
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	0
Harrowing,	-	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Carting manure,	-	-	-	-	-	-	0	16	3 $\frac{1}{2}$
Drilling,	-	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Horfe-hoeing,	-	-	-	-	-	-	0	0	5
Carting in harvest,	-	-	-	-	-	-	0	0	0 $\frac{1}{2}$
									<hr/>
							0	18	10 $\frac{1}{2}$
									<hr/>
Total loss, 10l. 2s. 10d. per acre,	-	-	-	-	-	-	2	10	8 $\frac{1}{2}$

OBSERVATIONS.

Those who make it their employment to try experiments, will every now and then meet with events truly unaccountable, and which contradict all ideas, expectations, and received opinions. The result of this experiment is one of these; when the manuring had carried the crop through the summer with a healthy appearance to the last—no unwholesome rankness---no mildew---nor any of it laid, I concluded the product would be equal to the appearance; the contrary I know not how to solve, but by conjecture.

The manure, of an admirable quality, is very expensive, amounting proportionably to more than the whole loss---now the corn occupying only a fifth of the ground, it probably did not draw much nourishment from the manure; and if so, could not consequently be proportionably benefited by it: but yet this solution of the difficulty does not tally with the manured crop in-L*, this year. In a word, a clear idea of the case is not to be gained.

EXPERIMENT N° 8.

Culture, expences, and produce, of a rood, field M*, 1764.

CULTURE.

This like the preceding pieces received the first tillage in autumn 1762. Was fallowed the succeeding summer extremely well, receiving in all by the 12th of september 9 clean earths and 3 harrowings. The land was then quite level, and a few days after drilled, in equally distant rows, 1 foot asunder. It was then slightly water-furrowed. In march it received the first hand-hoeing; and the end of april the second; and some weeds arising afterwards, it was hand-weeded the middle of june. Nothing could carry a better appearance quite to reaping, than this crop. It was cut the last week in august. The produce, 1 qr. 2 bush.

EXPENCES.

	£.	s.	d.
Nine ploughings,	0	2	3
Three harrowings,	0	0	3
Drilling,	0	0	6
Seed 4 pecks,	0	5	0
Water-furrowing,	0	0	9
Hand-hoeing twice,	0	4	0
Hand-weeding once,	0	1	6
Reaping,	0	1	6
Harvesting,	0	0	7
Threshing,	0	2	6
	0	18	10
Rent, &c.	0	8	6

1 7 4

PRODUCE.

	£.	s.	d.
1 qr. 2 bushels, at 43s.	2	13	9
Expences,	1	7	4
Profit, 5l. 5s. 8d. per acre,	1	6	5

	£.	s.	d.
Ploughing,	0	2	3
Harrowing,	0	0	1½
Drilling,	0	0	0½
Carting in harvest,	0	0	0½
	0	2	5½

Clear profit, 4l. 15s. 9d. per acre, 1 3 11½

OBSER-

OBSERVATIONS.

This is a most beneficial crop; the product great, and the profit no less considerable; and concurs with many other of these experiments to prove the beneficial nature of this method.

OBSERVATIONS ON THE DRILLED CROPS OF 1764.

The remarks which my own experiments give rise to are too numerous, to take notice of those of other writers. If I was not afraid of swelling these sheets to an enormous size, I should expatiate more on those parts of my experience which contradict that of other writers; but as my soils, method, &c. &c. are perhaps extremely different, the reader will himself suppose, that in many points great variations must arise.

This year being the first of my practising the new husbandry, I had not any experience of my own for a guide; I was conducted by books; but these I found varied so much, that a general idea I caught of the principles of the Tullian husbandry was what I pursued: upon renewing the result of these trials, I have some reason to think I have not been erroneous. I was in all attentive to prepare the land well, by numerous and good ploughings. I took warning by some writers, who confessed their being too sparing of seed: dropping it plentifully, the land was thoroughly water-furrowed, and at a considerable expence; a point I do not recollect seeing properly stated in any book; but I believe dry land has been chiefly applied to this culture. The grand article of extirpating weeds was never neglected, both by horse-hoeing, hand-hoeing, and weeding; and the expence these were of to me, makes me think my land more inclined to weeds than other mens; the sums I have read of for these purposes not being a quarter what they cost me.

In all these crops, the appearance of the regular strait rows of corn upon fine and clean land was very pleasing, and looked so much like a neat accurate husbandry, that the very agreeableness of the sight, independent of profit, would in future induce me always to have some drilled crops. As to the quality of the grain, these experiments were in this respect superior to the common fields; and this point is I believe pretty fairly seen in the prices of the corn; it does not amount however to so much as I expected from M. Du Chateauvieux' writings.

The result upon the whole of this year's trials is so favourable, that I shall prosecute them with redoubled attention, and by forming variations, attempt to gain fresh lights; some points are very much in the dark, particularly those of manuring, and the number of the rows; next year I shall know these matters more truly by far than at present.

EXPERIMENT N^o 9.

Culture, expences, and produce, of half an acre, field L*, 1765.

CULTURE.

Ploughed for the first time in autumn 1763. Stirred again in march 1764. Twice more in april, and harrowed twice; the surface left fine and in good order for a crop of weeds, which accordingly arose plentifully; they were turned down by the fifth ploughing the middle of may. The 24th stirred again, and harrowed for the third time the 28th. In june it was ploughed thrice more, and twice in july. In august it received one earth, which threw it into 5 feet beds. The last or thirteenth was given the first of september, which arched it up; and then it was well harrowed for the fourth time. Three pecks and an half of wheat were drilled in 2 rows, 1 foot asunder, on the top of the beds; and the water-furrows then cut, deep and numerous.

The appearance through the winter and spring was very beautiful; the first horse-hoeing was given the 28th of march, after which the furrows were opened, and the 10th of april it was hand-hoed. May the 9th the second horse-hoeing was given, and the 23d it was again hand-hoed. June the 13th horse-hoed it again, and july the 8th for the last time: the corn held to its appearance through the season, which being very favourable to wheat upon heavy lands, gave me great hope of success, nor was I disappointed; it was reaped on the 21st, the produce 2 qrs. 2 bush.

EXPENCES.						£.	s.	d.
Thirteen ploughings,	-	-	-	-	-	0	6	6
Four harrowings,	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	0	0	1 $\frac{1}{4}$
3 $\frac{1}{2}$ pecks of seed,	-	-	-	-	-	0	4	9
Water-furrowing,	-	-	-	-	-	0	3	1
Four horse-hoeings,	-	-	-	-	-	0	1	4
Two hand-hoeings,	-	-	-	-	-	0	10	0
Reaping,	-	-	-	-	-	0	2	3
Harvesting,	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	0	4	6
						<hr/>		
						1	13	10 $\frac{1}{4}$
Rent, &c.	-	-	-	-	-	0	17	0
						<hr/>		
						2	10	10 $\frac{3}{4}$
PRODUCE.						£.	s.	d.
2 qrs. 2 bushels, at 43s.	-	-	-	-	-	4	16	9
Expences,	-	-	-	-	-	2	10	10 $\frac{3}{4}$
						<hr/>		
Profit, 4l. 11s. 8 $\frac{1}{2}$ d. per acre,	-	-	-	-	-	2	5	10 $\frac{1}{4}$

	£.	s.	d.
Ploughing, - - - - -	0	6	6
Harrowing, - - - - -	0	0	4½
Drilling, - - - - -	0	0	0½
Horse-hoeing, - - - - -	0	2	0
Carting in harvest, - - - - -	0	0	3½
	<hr/>		
		0	9 2½
Clear profit, 3 <i>l.</i> 13 <i>s.</i> 3½ <i>d.</i> per acre, - - - - -		1	16 7½
	<hr/>		

OBSERVATIONS.

This crop proved even better than I expected. A profit *per* acre of near four pounds from land that had been summer-fallowed so well, and left in such good order for another crop, is very great, and much exceeds the common husbandry, as commonly managed: I attribute the greatness of it, in a good measure, to the favourableness of the season; which, from much observation, I am confident is sufficient to balance almost all advantages; I do not mention this from the experiment before me, lying under any, but as a point which ought never to be forgotten in the numerous other circumstances, which call for our attention in forming such trials as these.

EXPERIMENT N^o 10.

Culture, expences, and produce, of half an acre, field L*, 1765.

CULTURE.

The reader is desired to turn to Experiment N^o 3 in this series; that half acre was this year drilled again.

The statches or beds, after the corn was reaped, laid in the following state: they were in an arched shape, and at the top of each two rows of stubble; it appeared necessary to crop this stubble quite close, which accordingly was performed directly after harvest, raked into heaps, and carried off: next the beds were ploughed down, by beginning to turn a furrow from their edges, into the large open interval, left by the last horse-hoeing; and so proceeding till the bed was finished, when the furrows were reversed; the middle of the bed lying over the former one; and the present furrow where the former was. Upon finishing the piece in this manner I saw at once that more tillage was necessary, as that ploughing did not lay the new beds into a regular arched form, being very low in the middle and high at the sides. I therefore ploughed it a second time in the upsetting way, which left them pretty well arched.

This is a point I apprehend to be of no trifling consequence, for in most soils the advantage of the wheat lying dry all winter is very great; and its having a good depth of well-pulverized molds to strike into, is also a benefit never to be over-looked.

After this tillage, the beds were harrowed and drilled in 2 rows 1 foot asunder, and took 3 pecks of seed. The field was then well water-furrowed.

March 26th it received the first horse-hoeing, and was hand-hoed the beginning of april. The 18th of that month it received the second horse-hoeing. And the 4th of may was again hand-hoed: the 24th was horse-hoed for the third time; and about the middle of june for the last time. It made an excellent appearance through the year, ripened well, and was reaped the last week in august. Produce 2 qrs. 4 bush. *per acre*.

EXPENCES.							£.	s.	d.
Cutting &c. the stubble °,	-	-	-	-	-	-	0	3	0
Two ploughings,	-	-	-	-	-	-	0	1	0
Harrowing,	-	-	-	-	-	-	0	0	2
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{3}{4}$
Seed,	-	-	-	-	-	-	0	4	0
Water-furrowing,	-	-	-	-	-	-	0	2	0
Four horse-hoeings,	-	-	-	-	-	-	0	1	4
Two hand-hoeings,	-	-	-	-	-	-	0	10	0
Reaping,	-	-	-	-	-	-	0	2	6
Harvesting, &c.	-	-	-	-	-	-	0	1	3
Threshing,	-	-	-	-	-	-	0	5	0
							<hr/>		
							1	10	4 $\frac{3}{4}$
Rent, &c.	-	-	-	-	-	-	0	8	6
							<hr/>		
							1	18	10 $\frac{3}{4}$
PRODUCE.							£.	s.	d.
2 qrs. and 4 bush. at 42s.	-	-	-	-	-	-	5	5	0
Expences,	-	-	-	-	-	-	1	18	10 $\frac{3}{4}$
							<hr/>		
Profit, 6l. 12s. 2 $\frac{1}{2}$ d. <i>per acre</i> ,	-	-	-	-	-	-	3	6	1 $\frac{1}{4}$
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	1	0
Harrowing,	-	-	-	-	-	-	0	0	2 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	0 $\frac{3}{4}$
Horse-hoeing,	-	-	-	-	-	-	0	2	0
Carting in harvest,	-	-	-	-	-	-	0	0	3 $\frac{1}{4}$
							<hr/>		
							0	3	6 $\frac{1}{4}$
							<hr/>		
Clear profit, 6l. 5s. 2d. <i>per acre</i> ,	-	-	-	-	-	-	3	2	7

° This work being performed before the common husbandry of the country is over, the price is out of all proportion to the winter one.

OBSER-

OBSERVATIONS.

This crop is a noble one indeed, and proves, if any thing can, that the drill culture is not only beneficial in the product itself, but also as a preparation for succeeding ones. The manure, which last year was not attended with the desired effect, seems to have operated greatly here; and meeting with a beneficial season, the product is very great; and the profit, from the lightness of the expences, as well as the greatness of the crop, very considerable. From the utmost attention that could be given to the drilling, tillage, &c, it appeared not the least the more difficult to be performed from that, on account of all the land not being fallowed. I have not given this account credit for the value of the stubble, the quantity being trifling; I think the omission of charging the horses, and wear and tear in carting it away, will answer the value; as it was a delicate and troublesome business to spare the beds being much trampled.

EXPERIMENT N^o II.

Culture, expences, and produce, of half an acre, field L*, 1765.

CULTURE.

This piece was fallowed: it received the first ploughing in autumn 1763; the second in april 1764; and between that time and the end of august, six more. The first week in september two thirds of it was thrown into beds 5 feet wide, and one third into beds 6 feet wide, and in a few days after arched up, by the tenth and last ploughing, and harrowed; it was then sown as follows:

One third, (the 5 feet beds) with 2 rows 1 foot asunder.

One third, (the 5 feet beds) with 3 rows 8 inches asunder.

One third, (the 6 feet beds) with 3 rows 1 foot asunder.

The intervals of the first were 4 feet wide.

second 3 feet 8 inches.

third 4 feet.

Each had a peck of seed assigned to it, that a variation of quantity might not occasion differences, which I would have alone the effect of the number and distance of the rows. The water-furrows were cut through all alike. The first horse-hoeing (in the method of giving which operation there was no difference) was performed in the middle of april, the same day for them all: which exactness was carried through all the work attending the crop. May 2d they were hand-hoed. The 17th horse-hoed again. June 3d hand-hoed again. The 12th horse-hoed. July 3d horse-hoed for the last time. August the 30th reaped; the products,

Treble rows at 1 foot	-	-	-	-	-	6 bush.
8 inches,	-	-	-	-	-	5
Double rows,	-	-	-	-	-	4
Total,	-	-	-	-	-	<hr/> 15 <hr/>

Account of the treble rows at 1 foot.

EXPENCES.							£.	s.	d.
Ten ploughings,	-	-	-	-	-	-	0	1	8
One harrowing,	-	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	-	0	0	0½
1 peck of seed,	-	-	-	-	-	-	0	1	8
Water-furrowing,	-	-	-	-	-	-	0	0	9
Four horse-hoeings,	-	-	-	-	-	-	0	0	4
Two hand-hoeings,	-	-	-	-	-	-	0	3	4
Reaping,	-	-	-	-	-	-	0	0	10
Harvesting,	-	-	-	-	-	-	0	0	4
Threshing,	-	-	-	-	-	-	0	1	6
							0	10	6
Rent, &c.	-	-	-	-	-	-	0	5	8
							0	16	2
PRODUCE.							£.	s.	d.
6 bushels, at 42s.	-	-	-	-	-	-	1	11	6
Expences,	-	-	-	-	-	-	0	16	2
Profit, 4l. 12s. per acre,	-	-	-	-	-	-	0	15	4
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	1	8
Harrowing,	-	-	-	-	-	-	0	0	0¼
Drilling,	-	-	-	-	-	-	0	0	0½
Horse-hoeing,	-	-	-	-	-	-	0	0	6¼
Carting in harvest,	-	-	-	-	-	-	0	0	1
							0	2	4
Clear profit, 3l. 18s. per acre,	-	-	-	-	-	-	0	13	0

Account of the treble rows at 8 inches.

EXPENCES.							£.	s.	d.
Ten ploughings,	-	-	-	-	-	-	0	1	8
One harrowing,	-	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	-	0	0	0½
Seed,	-	-	-	-	-	-	0	1	8
Water-furrowing,	-	-	-	-	-	-	0	0	9
Horse-hoeing,	-	-	-	-	-	-	0	0	4
Hand-hoeing,	-	-	-	-	-	-	0	3	6
Reaping,	-	-	-	-	-	-	0	0	10
Harvesting,	-	-	-	-	-	-	0	0	4
Threshing,	-	-	-	-	-	-	0	1	6
							0	10	8

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Expences,
Rent, &c.

£. s. d.
0 10 8
0 5 8

PRODUCE.

5 bushels, at 42s.

Expences,

£. s. d.
0 16 4
1 6 3
0 16 4

Profit, 2l. 19s. 6d. per acre,

0 9 11

Ploughing,

Harrowing,

Drilling,

Horse-hoeing,

Carting,

£. s. d.
0 1 8
0 0 0½
0 0 0½
0 0 8
0 0 1

0 2 5½

Clear profit, 2l. 4s. 7½d. per acre,

0 7 5½

Account of the double rows.

EXPENCES.

Ten ploughings,

Harrowing,

Drilling,

Seed,

Water-furrowing,

Horse-hoeing,

Hand-hoeing,

Reaping,

Harvesting,

Threshing,

£. s. d.
0 1 8
0 0 0½
0 0 0½
0 1 8
0 0 9
0 0 4
0 2 8
0 0 9
0 0 4
0 1 0

Rent, &c.

0 9 3
0 5 8

0 14 11

PRODUCE.

4 bushels, at 42s.

Expences,

£. s. d.
1 1 0
0 14 11

Profit, 1l. 16s. 6d. per acre,

0 6 1

Ploughing,

Harrowing,

Carried over,

£. s. d.
0 1 8
0 0 0½
0 1 8½

	£.	s.	d.
Brought over, - - - - -	0	1	8 $\frac{3}{4}$
Drilling, - - - - -	0	0	0 $\frac{1}{2}$
Horfe-hoeing, - - - - -	0	0	8
Carting, - - - - -	0	0	1
	<hr/>		
	0	2	5 $\frac{3}{4}$
Clear profit, 1 <i>l.</i> 1 <i>s.</i> 7 $\frac{1}{2}$ <i>d.</i> - - - - -	0	3	7 $\frac{1}{4}$
Profit of trebble rows 1 foot, - - - - -	3	18	0
Ditto of ditto at 8 inches, - - - - -	2	4	7 $\frac{1}{2}$
The former superior by - - - - -	1	13	4 $\frac{1}{2}$
Profit of trebble rows 8 inches, - - - - -	2	4	7 $\frac{1}{2}$
Ditto of the double, - - - - -	1	1	7 $\frac{1}{2}$
The former superior by - - - - -	1	3	0
Treble rows 1 foot, - - - - -	3	18	0
Double, - - - - -	1	1	7 $\frac{1}{2}$
The former superior by - - - - -	2	16	4 $\frac{1}{2}$

OBSERVATIONS.

This comparison, which appears to me very satisfactory, decides in favour of 3 rows at either distance, but peculiarly for those at 1 foot; but though all circumstances were upon an equality, and the whole conduct of the experiment perfectly fair to each, yet the double rows being a much less crop than I received this year from other pieces in the same field, inclines me to think, that a repetition of this trial for several years would not upon the whole discover so great a disproportion as the above. That the 3 rows are best I have no doubt, but I cannot conceive that they are so much superior upon an average of years. However, I shall not fail to repeat the experiment every year until the fact is decisive. This trial is absolute for this year, as the equality of treatment renders the result indubitable.

General account of this half acre.

EXPENCES.				£.	s.	d.
Total of the three articles of expences, - - -	-	-	-	2	14	8 $\frac{1}{2}$
PRODUCE.				£.	s.	d.
15 bushels, at 4 <i>s.</i> - - - - -	-	-	-	3	18	9
Expence, - - - - -	-	-	-	2	14	8 $\frac{1}{2}$
Clear profit, 2 <i>l.</i> 8 <i>s.</i> 1 <i>d.</i> per acre, - - -	-	-	-	1	4	0 $\frac{1}{2}$

This experiment, taken at large, is a farther confirmation of the excellence of this method of husbandry. The product is great, and the profit very considerable.

EXPERIMENT N° 12.

Culture, expences, and produce, of half an acre, field M*, 1765.

CULTURE.

This piece received its first tillage in the autumn of 1763. It was fallowed through the following spring and summer; twice harrowed in april, and the weeds that arose turned down by one of the ploughings. The number of them to the end of august was seven. The first week in september it was thrown into beds, two thirds of it 5 feet broad, and those of one third 6 feet. Another ploughing soon after arched them up; they were then harrowed, and sown as follows; this experiment being the same as N° 11, only differing in the soil:

One third (5 feet beds) with 2 rows 1 foot asunder.

One third (5 feet beds) with 3 rows 8 inches asunder.

One third (6 feet beds) with 3 rows 1 foot asunder.

Each was sown with 1 peck of wheat. The last week in march the first horse-hoeing was given; and the beginning of april they received the first hand-hoeing: the end of the same month the second horse-hoeing. In may it was again both horse and hand-hoed. The middle of june horse-hoed again: the crops all carried a very good countenance through the year, and were reaped the 27th of august. Products,

	B.	P.
N° 1, Treble rows, at 1 foot,	4	1
N° 2, 8 inches,	3	3
N° 3, Double rows,	3	2
Total,	11	2

Account of N° 1.

	EXPENCES.	£.	s.	d.
Nine ploughings,	- - - - -	0	1	6
Three harrowings,	- - - - -	0	0	1½
Drilling,	- - - - -	0	0	0½
Seed,	- - - - -	0	1	8
Four horse-hoeings,	- - - - -	0	0	4
Two hand ditto,	- - - - -	0	3	6
Reaping,	- - - - -	0	0	10
Harvesting,	- - - - -	0	0	6
Threshing,	- - - - -	0	1	1½
		0	9	7½

Expences,
Rent, &c.

£. s. d.

0 9 7½

0 5 8

0 15 3½

PRODUCE.

£. s. d.

1 1 3

0 15 3½

4 bush. 1 peck, at 40s.

Expences,

Profit, 1l. 15s. 9d. per acre,

0 5 11½

£. s. d.

0 1 6

0 0 1

0 0 0½

0 0 6½

0 0 1

Ploughing,

Harrowing,

Drilling,

Horfe-hoeing,

Carting in harvest,

0 2 2½

Clear profit, 1l. 2s. 4½d. per acre,

0 3 8½

Account of N^o 2,

EXPENCES.

£. s. d.

0 1 6

0 0 1½

0 0 0½

0 1 8

0 0 5½

0 3 6

0 0 10

0 0 6

0 0 10

Nine ploughings,

Three harrowings,

Drilling,

Seed,

Horfe-hoeing,

Hand-hoeing,

Reaping,

Harvesting,

Threshing,

Rent, &c.

0 9 5½

0 5 8

0 15 1½

PRODUCE.

£. s. d.

0 18 9

0 15 1½

3 bush. 3 pecks, at 40s.

Expences,

Profit, 1l. 1s. 10½d. per acre,

0 3 7½

£. s. d.

0 1 6

0 0 1

Ploughing,

Harrowing,

Carried over,

0 1 7

	£.	s.	d.
Brought over,	0	1	7
Drilling,	0	0	0 $\frac{1}{2}$
Horfe-hoeing,	0	0	8
Carting in harvest,	0	0	1
	<hr/>		
		0	2 4 $\frac{1}{2}$

Clear profit, 7s. 7d. $\frac{1}{2}$ per acre,Account of N^o 3.

EXPENCES.

	£.	s.	d.
Nine ploughings,	0	1	6
Three harrowings,	0	0	1 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{1}{2}$
Seed,	0	1	8
Four horfe-hoeings,	0	0	5 $\frac{1}{4}$
Hand-hoeings,	0	2	6
Reaping,	0	0	9
Harvesting,	0	0	5
Threshing,	0	0	9 $\frac{1}{2}$
	<hr/>		
		0	8 2 $\frac{3}{4}$
Rent, &c.	0	5	8
	<hr/>		
		0	13 10 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
3 bush. 2 pecks, at 40s.	0	17	6
Expences,	0	13	10 $\frac{1}{4}$

Profit, 1l. 1s. 7 $\frac{1}{2}$ d. per acre,

	£.	s.	d.
Ploughing,	0	1	6
Harrowing,	0	0	1
Drilling,	0	0	0 $\frac{1}{2}$
Horfe-hoeing,	0	0	8
Carting,	0	0	1
	<hr/>		
		0	2 4 $\frac{1}{2}$

Clear profit, 7s. 4 $\frac{1}{2}$ d. per acre,

Profit per acre on treble rows, at 1 foot,

Ditto on ditto, at 8 inches,

The former superior by

Profit per acre of the 8 inch treble rows,

Ditto of double ones,

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The

	£.	s.	d.
The former superior by	0	0	3
Profit of the treble rows, 1 foot,	1	2	4½
Ditto of the double,	0	7	4½
The former superior by	0	15	0

OBSERVATIONS.

We find from this experiment, that the 3 rows at 1 foot asunder maintain their superiority, upon this soil, as well as that of L*, but not by such a vast difference; which confirms my opinion before mentioned, that the result of N° 11 would not hold good upon an average by trials. But this point must be farther enquired into, by succeeding experiments. The double rows and treble ones at 8 inches are very near upon an equality; for which reason the double, according to this result, should be preferred, as the work is less expensive, and less complex. I can offer no general remark of consequence upon the result of these two trials, as they contradict each other so much; I wish they had been more consistent: but the events of experiments in husbandry are frequently so unexpected and wild, that absolute knowledge of one point is not to be gained without several years attention.

General account of this half acre.

	EXPENCES.	£.	s.	d.
Total of the three articles,	- - -	2	11	3¼
	PRODUCE.	£.	s.	d.
11 bush. 2 pecks, at 40s.	- - -	2	17	6
Expences,	- - -	2	11	3¼
Profit, 12s. 5½d. per acre,	- - -	0	6	2¼

This half acre upon the whole is by no means equal to what might be expected from the ample profit of so many other experiments this year: but variations of this sort are frequent in the old husbandry; we must certainly expect them in the new.

EXPERIMENT N° 13.

Culture, expences, and produce, of a rood, field L*, 1765.

CULTURE.

This piece received a ploughing in October 1763. It was stirred again in April 1764, and three times in May; also two harrowings. From thence to the end of August, it received four more earths. The tenth ploughing was given the first week in September, which left the land upon a perfect level.

It

It was then harrowed twice, and drilled in equally distant rows, 1 foot asunder: taking 4 pecks of feed. It was then thoroughly water-furrowed. April 13th it received the first hand-hoeing; and may 22d the second. It was reaped the 3d of september. Product, 7 bushels.

EXPENCES.					£.	s.	d.
Ten clean earths,	-	-	-	-	0	2	6
Four harrowings,	-	-	-	-	0	0	2
Drilling,	-	-	-	-	0	0	1½
Seed,	-	-	-	-	0	4	9
Water-furrowing,	-	-	-	-	0	0	11
Hand-hoeing,	-	-	-	-	0	3	0
Reaping,	-	-	-	-	0	1	0
Harvesting,	-	-	-	-	0	0	3
Threshing,	-	-	-	-	0	1	7
					0	14	3½
Rent, &c.	-	-	-	-	0	8	6
					1	2	9½

PRODUCE.					£.	s.	d.
7 bushels, at 40s.	-	-	-	-	1	15	0
Expences,	-	-	-	-	1	2	9½
Profit, 2l. 8s. 10d. per acre,	-	-	-	-	0	12	2½
					£.	s.	d.
Ploughing,	-	-	-	-	0	2	6
Harrowing,	-	-	-	-	0	0	2¼
Drilling,	-	-	-	-	0	0	1¼
Carting,	-	-	-	-	0	0	1½
					0	2	11
Clear profit, 1l. 17s. 2d. per acre,	-	-	-	-	0	9	3½

OBSERVATIONS.

The great success that attended this method of drilling last year, I must confess, made me expect a more profitable crop upon this piece; but it would be endless to remark, that such variations are too frequent, even to expect a general uniformity in the result of similar experiments. Although the profit is not equal to what was last year, yet it is certainly very considerable.

EXPERIMENT N^o 14.

Culture, expences, and produce, of a rood, field L*, 1765.

CULTURE.

This piece received one ploughing in october 1763, which turned in 5 loads (40 bush.) of farm-yard dung. The first week in april, it was stirred again and harrowed; and the last week, both those operations were repeated. In may, it was ploughed thrice, and harrowed twice. Many weeds arose after being left in this fine order; which were all turned down by the seventh earth the end of june. In july two more were given. In august two more, the last of which threw it into beds, 5 feet broad. The first week in september these were arched up by another ploughing, and then harrowed. It was directly drilled with a peck and half of wheat, in double rows, 1 foot asunder; and afterwards water-furrowed. The first horse-hoeing was given the 4th of april, and it was hand-hoed the 18th of the same month. The next horse-hoeing was done the 8th of may: and the 20th it was again hand-hoed. June 12th it received another horse-hoeing; and it was reaped the 26th of august. Through the whole season, the appearance was very fine. The product, 1 qr. 1 bushel.

EXPENCES.

	£.	s.	d.
Twelve ploughings,	0	3	0
Four harrowings,	0	0	2½
Labour, manuring,	0	1	3
Drilling,	0	0	1
Seed,	0	1	10
Water-furrowing,	0	0	8
Horse-hoeing,	0	0	8
Two hand-hoeings,	0	2	0
Reaping,	0	1	0
Harvesting,	0	0	4
Threshing,	0	2	3
	0	13	3½
Rent, &c.	0	8	6
	1	1	9½

PRODUCE.

	£.	s.	d.
1 qr. and 1 bushel, at 42s.	2	7	3
Expences,	1	1	9½
Profit, 5l. 1s. 11d. per acre,	1	5	5½

Ploughing.

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	2½
Carting manure,	0	0	11½
Drilling,	0	0	0½
Horse-hoeing,	0	1	0
Carting in harvest,	0	0	1½
			<hr/>
		0	5 3½
Clear profit, 4l. 0s. 8d. per acre,		1	0 2

OBSERVATIONS.

From the result of this experiment it appears, that manuring the fallow at breaking up is a proper time, and particularly as the weeds are thereby greatly pushed to shew themselves, and consequently eradicated; and, by being turned about so often, it is so well mixed with the soil, and refined, that the rank nature of it, which is oftentimes pernicious, is much corrected, a point of some importance. This crop is extremely profitable: to say the truth, the profit of my drilling experiments this year is so great, that I scarcely know how to believe the result of my own accurate trials; for in contemplation I could not conceive, that so small a part of the land, being occupied by the plants, could allow such great crops. This was my opinion when I *reasoned* upon the new husbandry; but the result of my practice forces me to a change.

EXPERIMENT N° 15.

Culture, expences, and produce, of half an acre, field M*, 1765.

CULTURE.

The reader is desired to turn to Experiment N° 5, in last year's series; that piece was drilled again this year, directly after harvest; the stubble was chopt and raked into heaps, and carted away; and the beds, being reversed by two ploughings, were drilled again, with three pecks of wheat, in double rows, 1 foot asunder.

March 13th the first horse-hoeing was given; and the end of that month, the rows were hand-hoed. In april it was again both hand and horse-hoed; which last operation was again repeated in may; and the 22d of june again for the last time. The wheat was reaped the last week in august. Product, 1 qr. 2 bushels.

	EXPENCES.	£.	s.	d.
Cutting, &c. the stubble,	- - - - -	0	2	6
Two ploughings,	- - - - -	0	1	0
Harrowing,	- - - - -	0	0	1
				<hr/>
Carried over,	- - - - -	0	3	7

	£.	s.	d.
Brought over,	0	3	7
Drilling,	0	0	14
Seed,	0	3	9
Four horse-hoeings,	0	1	4
Two hand-hoeings,	0	3	9
Reaping,	0	2	0
Harvesting,	0	0	6
Threshing,	0	2	6
	0	17	6 $\frac{1}{4}$
Rent, &c.	0	8	6
	1	6	0 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
1 qr. 2 bush. at 42s.	2	12	6
Expences,	1	6	0 $\frac{1}{4}$
Profit, 2l. 12s. 10 $\frac{1}{2}$ d. per acre,	1	6	5 $\frac{1}{4}$
	£.	s.	d.
Ploughing,	0	1	0
Harrowing,	0	0	1
Drilling,	0	0	1 $\frac{1}{2}$
Horse-hoeing,	0	2	0
Carting in harvest,	0	0	3 $\frac{1}{4}$
	0	3	5 $\frac{3}{4}$
Clear profit, 2l. 5s. 11d. per acre,	1	2	11 $\frac{1}{2}$

OBSERVATIONS.

This experiment is a fresh proof that drilled land is thereby prepared for a new crop; otherwise so very beneficial a one could not have been this year produced. Few parts of the old husbandry can near equal this, of two large and profitable crops of wheat being successively reaped from the same land, and that left in a good state for a third. If drilling, in a variety of seasons, comes upon the whole to near this profit, it will, I am confident, soon gain such ground in the kingdom, as to supersede the broad cast method.

EXPERIMENT N° 16.

Culture, expences, and produce, of a rood, field M*, 1765.

CULTURE.

Ploughed for the first time in autumn 1763; and summer-fallowed through the following year; receiving in the whole eight ploughings by the

the last week in august; the last threw it into beds 5 feet wide; which were arched in by the ninth earth, and then harrowed. It was drilled about the middle of september, in double rows, 1 foot asunder, and took a peck and half of seed. The following spring and summer, it was horse-hoed four times, and twice hand-hoed, at the times I had in general performed those operations upon the preceding crops. It was reaped the last week in august. Product, 5 bushels.

EXPENCES.						£.	s.	d.
Nine ploughing,	-	-	-	-	-	0	2	3
One harrowing,	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	0	0	0½
Seed,	-	-	-	-	-	0	1	10
Horse-hoeing,	-	-	-	-	-	0	0	8
Hand-hoeing,	-	-	-	-	-	0	2	6
Reaping,	-	-	-	-	-	0	1	4
Harvesting,	-	-	-	-	-	0	0	5
Threshing,	-	-	-	-	-	0	1	3
						<hr/>		
Rent, &c.	-	-	-	-	-	0	10	4½
						0	8	6
						<hr/>		
						0	18	10½

PRODUCE.						£.	s.	d.
5 bushels, at 42s.	-	-	-	-	-	1	6	3
Expences,	-	-	-	-	-	0	18	10½
						<hr/>		
Profit, 1l. 9s. 7d. per acre,	-	-	-	-	-	0	7	4½

						£.	s.	d.
Ploughing,	-	-	-	-	-	0	2	3
Harrowing,	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	0	0	0½
Horse-hoeing,	-	-	-	-	-	0	1	0
Carting in harvest,	-	-	-	-	-	0	0	1½
						<hr/>		
						0	3	5½
						<hr/>		
Clear profit, 15s. 8d. per acre,	-	-	-	-	-	0	3	11

OBSERVATIONS.

It is chiefly to be remarked here, that in many variations of trial, this year as well as the preceding, most of the drilled crops on a fallow have paid their expences with a great profit, which is doing more than I should have expected, as a fallow might easily have been supposed to load the first year's account of expences too much for leaving profit. I cannot at all account

count for this crop being inferior to several others this year, the whole process of cultivation was equally complete with any of the rest.

EXPERIMENT N° 17.

Culture, expences, and produce, of a rood, field M*, 1765.

CULTURE.

It is useless to minute in every experiment the exact time of each preparatory operation; it will be sufficient to specify that this piece was ploughed in autumn 1763, and fallowed through the following summer, receiving in all nine ploughings, and three harrowings; at the conclusion of which tillage, it was left perfectly level and fine. It was then drilled in equally distant rows, 1 foot asunder, taking 2 pecks of seed. The following year it was hand-hoed twice; reaped the first week in september. The product, 7 bushels.

EXPENCES.							£.	s.	d.
Nine clean earths,	-	-	-	-	-	-	0	2	3
Three harrowings,	-	-	-	-	-	-	0	0	1½
Drilling,	-	-	-	-	-	-	0	0	1½
Seed,	-	-	-	-	-	-	0	2	6
Two hand-hoeings,	-	-	-	-	-	-	0	6	0
Reaping,	-	-	-	-	-	-	0	1	6
Harvesting,	-	-	-	-	-	-	0	0	4
Threshing,	-	-	-	-	-	-	0	1	9
							0	14	6½
Rent, &c.	-	-	-	-	-	-	0	8	6
							1	3	0½
PRODUCE.							£.	s.	d.
7 bushels, at 42s.	-	-	-	-	-	-	1	16	9
Expences,	-	-	-	-	-	-	1	3	0½
							0	13	8½
Profit, 2l. 14s. 9d. per acre,	-	-	-	-	-	-	2	14	9
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	3
Harrowing,	-	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	-	0	0	1½
Carting in harvest,	-	-	-	-	-	-	0	0	1½
							0	2	6½
							0	11	2
Clear profit, 2l. 4s. 8d. per acre,	-	-	-	-	-	-	2	4	8

OBSERVATIONS.

This crop, like so many other drilled ones, is extremely profitable, and displays with fresh lustre the success of this new method. It is wrong to be too sanguine in one's hope, from the result of a few trials; but the event of these has been in general so very favourable, that I think the principles upon which drilling is founded cannot be false. In whatever way the rows are sketched, still it is in general superior to the common method.

OBSERVATIONS on the Drilled Crops of 1765.

This year's experience in drilling wheat has upon the whole been attended with extremely important consequences: it has discovered, that sowing in 3 rows, at 1 foot asunder, is the best method; and it gives no slight reason for apprehending that 3 rows at 8 inches are preferable to 2 at 1 foot. These points, though not determinately proved from several years trials, are yet much more in the light to me than they were last year. We also know conclusively, from the preceding experiments, that the first year's drilled crop neither exhausts the soil, nor leaves it in an improper state for a succeeding one; as the experiments of the second year's crops on the same land were greatly favourable to the idea of continued ones: the soil at the end of the second year being to appearance in as good a state as before it was sown. Further, we know from these trials, that under numerous variations drilled crops on a fallow are good enough, both horse-hoed, and equally distant ones, to pay the expences of the fallow year, and yet leave a considerable profit. - The profit of some particular crops this year has advanced extremely high; far beyond any in the common husbandry, and sufficient to form a rational foundation for very sanguine hope of future and continued success.

EXPERIMENT N° 18.

Culture, expences, and produce, of half an acre, field L*, 1766.

CULTURE.

This half acre is the same as was registered last year, in Experiment N° 10. It was now drilled again, for the third time.

Directly after the harvest of 1765, the stubble was cut, raked up, and carted away.

In consequence of the result of last year's comparative experiments, I threw down the old beds to a level, and formed new ones of 6 feet breadth; this I was not able to effect in an arched, neat, and husband-like manner, under three ploughings and an half. It was harrowed twice, and then drilled with three rows, 1 foot asunder, taking 3 pecks of seed. I was much pleased to find, by these ploughings, that the soil was in an excellent state of looseness, free from weeds and clods; deep, and well pulverized.

The piece was well water-furrowed;—I was enabled, by the unusual fine weather the beginning of march, to give the first horse-hoeing the first week in it, which was very early for this land. The 17th it was hand-hoed. The 14th of april horse-hoed again, and hand-hoed the 26th. The first fortnight in may, was nothing but rain: the weeds rose fast; inso-much that I found it absolutely necessary to hand-hoe again, which was done the 17th. The earth was too wet to horse-hoe all this month. June 4th, it was horse-hoed for the third time. And again hand-hoed the 24th; this operation was absolutely necessary, to keep the land tolerably clean. July 7th gave the last horse-hoeing. Viewed the field the 21st, and found a thorough weeding by hand necessary, which was accordingly performed. The middle of august, the whole was mildewed, a misfortune common to many crops in the neighbourhood, but not near so much as this, and the rest of my drilled ones. It was reaped the 4th of september; product, 3 bushels.

EXPENCES.						£.	s.	d.
Three clean errths and an half,	-	-	-	-	-	0	1	9
Two harrowings,	-	-	-	-	-	0	0	2
Drilling,	-	-	-	-	-	0	0	1½
Seed,	-	-	-	-	-	0	4	0
Water-furrowing,	-	-	-	-	-	0	3	2
Four horse-hoeings,	-	-	-	-	-	0	1	0
Four hand-hoeings,	-	-	-	-	-	0	10	0
One hand-weeding,	-	-	-	-	-	0	3	6
Reaping,	-	-	-	-	-	0	2	3
Harvesting,	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	0	1	8
						<hr/>		
Rent, &c.	-	-	-	-	-	1	8	4½
						0	8	6
						<hr/>		
						1	16	10½

PRODUCE.						£.	s.	d.
3 bushels, at 45s.	-	-	-	-	-	0	16	10½
						<hr/>		
Expences,	-	-	-	-	-	1	16	10½
Produce,	-	-	-	-	-	0	16	10½
						<hr/>		
Loss, 2l. os. 0½d. per acre,	-	-	-	-	-	1	0	0½
						<hr/>		
Ploughing,	-	-	-	-	-	0	4	2½
Harrowing,	-	-	-	-	-	0	0	6½
Drilling,	-	-	-	-	-	0	0	1½
						<hr/>		
Carried over,	-	-	-	-	-	0	4	10½

Brought over,
Horse-hoeing,
Carting in harvest,

Total loss, 2l. 13s. 7d. per acre,

OBSERVATIONS.

The result of this experiment has somewhat the appearance of clipping the pinions of my drilling ideas, which were rather too much upon the wing last year. This event, I must own, surprized me much; for, although the year was peculiarly unfavourable, yet so diligent was I in my attention to horse and hand-hoeing, weeding, &c, that I expected to have much exceeded the common crops, till I found the rows of corn more mildewed than the broad cast crops. The bulk of straw was very great; and though many very heavy rains came before the harvest, yet none of it was beaten quite down; it inclined every way, and was bent and entangled, but upright enough for nourishment to pass through the stalk, to the ear; at the same time most of the broad cast crops, that were good in straw, were much laid. This loss is very great, and much more than was incurred by the generality of bad crops in the common method of sowing.

EXPERIMENT N° 19.

Culture, expences, and produce, of half an acre, field M*, 1766.

CULTURE.

This half acre is the same as registered in Experiment N° 15, being drilled again this year for the third time.

It would be totally useless to recite every day in which each article of tillage were given; the season was so extremely wet, that the culture was caught by snatches, and nearly at the same time, through all my experiments of this year, viz. the dates inserted in N° 18.

This piece was thrown level, and formed again into beds 6 feet wide, and harrowed, by three ploughings and an half, and 2 harrowings: it was then drilled in treble rows 1 foot asunder, taking 3 pecks of seed. The succeeding spring and summer it received four horse-hoeings, four hand-hoeings, and two hand-weedings. A culture, which might almost be called enormous; and yet the weeds grew so prodigiously fast, and upon land which I had conceived did not contain a single root or seed, that nothing less could keep the soil clean from those execrable enemies. The middle of august it became excessively mildewed, and was reaped the 4th of september; product, 4 bushels and a peck.

[M 2]

EXPEN-

EXPENCES.		£.	s.	d.
Three ploughings and half,		0	1	9
Two harrowings,		0	0	2
Drilling,		0	0	11
Seed,		0	4	0
Four horse-hoeings,		0	1	0
Four hand-hoeings,		0	9	6
Two hand-weedings,		0	6	0
Reaping,		0	2	6
Harvesting,		0	0	9
Threshing,		0	2	11

Rent, &c. - - - - - 1 7 11

PRODUCE.		£.	s.	d.
4 bushels and 1 peck, at 46s.		1	4	5
Expences,		1	16	5
Produce,		1	4	5

Loss, 1l. 4s. per acre, - - - - - 0 12 0

	£.	s.	d.
Ploughing,	0	4	2
Harrowing,	0	0	6
Drilling,	0	0	1
Horse-hoeing,	0	1	7
Carting in harvest,	0	0	3

Total loss, 1l. 17s. 6½d. per acre, - - - - - 0 18 9

OBSERVATIONS.

This experiment, like the preceding, is a proof, that the very best of husbandry --- that methods which are greatly successful in some years, will not stand the test of all seasons: however secure we may think ourselves of moderate success, yet that will often be snatched away. It must be reserved to future trials, to state the profit of drilling upon an average of seasons; from an attentive view of these two crops, I am apt to believe, that corn well cultivated in rows is more apt to be mildewed than the broad cast crops: and this is in some measure a confirmation of the idea which arose upon the result of another experiment, before related --- that there is a richness and moisture in the stalks and leaves of some corn, which makes it

it more liable to attract or intercept the mildew; and if drilled crops in a series of years are found more open to such attacks than common ones, it will certainly prove a great disadvantage. The stalks of this piece were quite speckled before the common broad cast crops were touched.

EXPERIMENT N° 20.

Culture, expences, and produce, of half an acre, field L #, 1766.

CULTURE.

This piece is the same as was registered in Experiment N° 11. being now drilled again, the same as before, for a continuation of that trial; viz.

One third (5 feet beds) with 2 rows 1 foot asunder.

One third (5 feet beds) with 3 rows 8 inches asunder.

One third (6 feet beds) with 3 rows 1 foot asunder.

Each had a peck of seed. Every article of preparation, culture, &c. &c. was performed to each in the same manner, and on the same day.

The water-furrowing was completely done. They were all horse-hoed four times; hand-hoed four times, and weeded twice. In august, at the same time as the other drilled crops were mildewed, this suffered the same fate; but I remarked that the double rows were worse than the treble ones, between which I saw no difference. The product,

B. P.

Treble rows at 1 foot,	-	-	-	-	-	-	2	3
8 inches,	-	-	-	-	-	-	2	1
Double rows,	-	-	-	-	-	-	2	0
							<u>7</u>	<u>0</u>

Account of treble rows at 1 foot.

EXPENCES.

	£.	s.	d.
Two ploughings P,	0	0	4
One harrowing,	0	0	0½
Drilling,	0	0	0½
Seed,	0	1	4
Water-furrowing,	0	0	9
Four horse-hoeings,	0	0	4
Four hand-hoeings,	0	5	6
Two weedings,	0	1	6
Reaping,	0	0	8
Harvesting,	0	0	6
Threshing,	0	1	6
	<u>0</u>	<u>12</u>	<u>6</u>

To obviate objections, I tried this half acre, without cutting or raking the old stubble; accordingly it is not charged: but I shall not repeat it, for though I managed this crop very well, yet it requires too much attention; it is much better to have a clear coast.

Expences,
Rent, &c.

£. s. d.

0 12 6

0 2 10

0 15 4

PRODUCE.

2 bushels and 3 pecks, at 45s.

£. s. d.

0 16 3

Expences,

0 15 4

Profit, 5s. 6d. per acre,

0 0 11

Ploughing,

£. s. d.

0 0 9½

Harrowing,

0 0 0¾

Drilling,

0 0 0½

Horse-hoeing,

0 0 6½

Carting in harvest,

0 0 1

0 1 6¼

Above profit,

0 0 11

Loss, 3s. 7½d. per acre,

0 0 7¼

Account of the treble rows at eight inches.

EXPENCES.

£. s. d.

Two ploughings,

0 0 4

One harrowing,

0 0 0½

Drilling,

0 0 0½

Seed,

0 1 4

Water-furrowing,

0 0 9

Four horse-hoeings,

0 0 5¼

Four hand-hoeings,

0 6 0

Two weedings,

0 2 0

Reaping,

0 0 8

Harvesting,

0 0 6

Threshing,

0 1 1½

0 13 2¼

Rent, &c.

0 2 10

0 16 0¾

PRODUCE.

2 bushels and 1 peck, at 45s.

£. s. d.

0 12 7½

Expences,

0 16 0¾

Produce,

0 12 7½

Loss, 1l. 0s. 6d. per acre,

0 3 5

	£.	s.	d.
Ploughing, - - - - -	0	0	9½
Harrowing, - - - - -	0	0	0½
Drilling, - - - - -	0	0	0½
Horse-hoeing, - - - - -	0	0	8
Carting in harvest, - - - - -	0	0	1
	<hr/>		
		0	1 7½
Total loss, 1l. 10s. 4½d. per acre, - - - - -		0	5 0½

Account of the double rows.

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	0	4
One harrowing, - - - - -	0	0	0½
Drilling, - - - - -	0	0	0½
Seed, - - - - -	0	1	4
Water-furrowing, - - - - -	0	0	9
Four horse-hoeings, - - - - -	0	0	5½
Four hand-hoeings, - - - - -	0	4	9
Two weedings, - - - - -	0	1	3
Reaping, - - - - -	0	0	7
Harvesting, - - - - -	0	0	6
Threshing, - - - - -	0	1	0
	<hr/>		
		0	11 0½
Rent, &c. - - - - -		0	2 10
	<hr/>		
		0	13 10½

PRODUCE.

	£.	s.	d.
2 bushels, at 44s. - - - - -	0	11	0
	<hr/>		
Expences, - - - - -	0	13	10½
Produce, - - - - -	0	11	0
	<hr/>		
Loss, 17s. 1½d. per acre, - - - - -		0	2 10½

	£.	s.	d.
Ploughing, - - - - -	0	0	9½
Harrowing, - - - - -	0	0	0½
Drilling, - - - - -	0	0	0½
Horse-hoeing, - - - - -	0	0	8
Carting in harvest, - - - - -	0	0	1
	<hr/>		
		0	1 7½
Loss, 1l. 7s. per acre, - - - - -		0	4 6

Loss by the treble rows, 8 inches,

Ditto, 1 foot,

The latter superior by

Loss by the double rows,

Treble, 1 foot,

Latter superior by

Loss by the treble rows, 8 inches,

Double ditto,

Latter superior by

£. s. d.

1 10 4½

0 3 7½

1 6 9

1 7 0

0 3 7½

1 3 4½

1 10 4½

1 7 0

0 3 4½

OBSERVATIONS.

This experiment, notwithstanding the general ill success of it, is attended with very important truths. We find that 3 rows on 6 feet of ground are greatly superior to 3 rows on 5 feet, and also to 2 rows on 5 feet. The result varies a little in proportion from the trial last year; but the general facts are equally strong, and in favour of the same method. The great difference between the seasons, one being very good, and the other as bad, is a further confirmation of this result; for a method which maintains its superiority through varying seasons is known much better than one that has had the experience only of one kind of season that is good or bad. Respecting my own practice and ideas, I consider the superiority of 3 rows at 1 foot with 4 feet intervals, to the other methods, as established; but I shall not cease repeated trials, that all the clearness possible may be gained.

General account of this half acre.

EXPENCES.		£.	s.	d.
Totals of these,	- - - - -	2	10	0½
PRODUCE.		£.	s.	d.
Totals,	- - - - -	1	19	10½
Loss, 1l. os. 4d. per acre,	- - - - -	0	10	2

This half acre upon the whole is, like the rest of this year's experiments, another proof that drilling, excellent as the method is, is liable to more mischiefs in some seasons than the broad cast way. Most of my drilled crops were mildewed more than any common ones.

EXPE-

EXPERIMENT N^o 21.

Culture, expences, and produce, of half an acre, field M*, 1766.

CULTURE.

This is the half acre registered last year in Experiment N^o 12; that trial on the number of rows was continued this year.

The old stubble was cut, raked together, and carted away; the beds reversed, and sown again as before; viz.

One third (5 feet beds) with 2 rows 1 foot asunder.

One third (5 feet beds) with 3 rows 8 inches asunder.

One third (6 feet beds) with 3 rows 1 foot asunder.

Each had a peck of seed. They were horse-hoed four times; hand-hoed thrice, and hand-weeded once. All excessively mildewed in august, but one not more than another. Reaped the first week in september.

	Product,	
	B.	P.
Treble rows, at 1 foot,	2	3
Ditto at 8 inches,	2	0
Double rows,	1	3
Total,	6	2

Account of the treble rows at 1 foot.

	EXPENCES.		
	£.	s.	d.
Cutting, &c. the stubble,	0	1	8
Two ploughings,	0	0	4
One harrowing,	0	0	0½
Drilling,	0	0	0½
Seed,	0	1	4
Four horse-hoeings,	0	0	4
Three hand-hoeings,	0	4	3
One weeding,	0	0	8
Reaping,	0	0	6
Harvesting,	0	0	6
Threshing,	0	1	6
Rent, &c.	0	11	2
	0	2	10
	0	14	0

	PRODUCE.		
	£.	s.	d.
2 bushels and 3 pecks, at 45s.	0	16	3
Expences,	0	14	0
Profit, 13s. 6d. per acre,	0	2	3
VOL. I.	[N] Ploughing,		

	£.	s.	d.
Ploughing,	0	0	9½
Harrowing,	0	0	0½
Drilling,	0	0	0½
Horse-hoeing,	0	0	6½
Carting in harvest,	0	0	1
	<hr/>		
	0	1	6½

Clear profit, 4s. 4½d. per acre, 0 0 8½

Account of the treble rows at 8 inches.

EXPENCES.

	£.	s.	d.
Cutting, &c. the stubble,	0	1	8
Two ploughings,	0	0	4
One harrowing,	0	0	0½
Drilling,	0	0	0½
Seed,	0	1	4
Four horse-hoeings,	0	0	5½
Three hand-hoeings,	0	4	6
One weeding,	0	0	10
Reaping,	0	0	8
Harvesting,	0	0	6
Threshing,	0	1	0
	<hr/>		
	0	11	4½
Rent, &c.	0	2	10

0 14 2½

PRODUCE.

	£.	s.	d.
2 bushels, at 45s.	0	11	3
Expences,	0	14	2½
Produce,	0	11	3
	<hr/>		
Loss, 17s. 7½d. per acre,	0	2	11½

	£.	s.	d.
Ploughing,	0	0	9½
Harrowing,	0	0	0½
Drilling,	0	0	0½
Horse-hoeing,	0	0	8
Carting,	0	0	1
	<hr/>		
	0	1	7½

Total loss, 1l. 7s. 6d. per acre, 0 4 7

Account

Account of the double rows.

EXPENCES.

Cutting, &c. the stubble,	-	-	-	-	-	0	1	8
Two ploughings,	-	-	-	-	-	0	0	4
One harrowing,	-	-	-	-	-	0	0	0
Drilling,	-	-	-	-	-	0	0	0
Seed,	-	-	-	-	-	0	1	4
Four horse-hoeings,	-	-	-	-	-	0	0	5
Three hand-hoeings,	-	-	-	-	-	0	3	0
One weeding,	-	-	-	-	-	0	0	8
Reaping,	-	-	-	-	-	0	0	6
Harvesting,	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	0	0	10
Rent, &c.	-	-	-	-	-	0	2	10

PRODUCE.

1 bushel and 3 pecks, at 45s.	-	-	-	-	-	0	9	9
Expences,	-	-	-	-	-	0	12	2
Produce,	-	-	-	-	-	0	9	9
Loss, 14s. 9d. per acre,	-	-	-	-	-	0	2	5

						£.	s.	d.
Ploughing,	-	-	-	-	-	0	0	9
Harrowing,	-	-	-	-	-	0	0	0
Drilling,	-	-	-	-	-	0	0	0
Horse-hoeing,	-	-	-	-	-	0	0	8
Carting in harvest,	-	-	-	-	-	0	0	1
						0	1	7

Total loss, 1l. 4s. 7½d. per acre,	-	-	-	-	-	0	4	1
Treble rows at 1 foot, profit,	-	-	-	-	-	0	4	4
Treble rows at 8 inches, loss,	-	-	-	-	-	1	7	6
The former superior by	-	-	-	-	-	1	11	10
Treble rows 1 foot, profit,	-	-	-	-	-	0	4	4
Double rows, loss,	-	-	-	-	-	1	4	7
The former superior by	-	-	-	-	-	1	9	0

	£.	s.	d.
Treble rows at 8 inches, loss, - - - - -	1	7	6
Double rows, ditto, - - - - -	1	4	7½
The latter superior by - - - - -	0	2	10½

OBSERVATIONS.

This experiment is a fresh proof of the superiority of the 3 rows; and, being a variation of foil, is of so much the better authority. But the half acre, upon the whole, adds a fresh weight into the wrong scale of drilling, as will appear from the following general state.

	EXPENCES.	£.	s.	d.
Totals, - - - - -	- - - - -	2	5	2½
	PRODUCE.	£.	s.	d.
Totals, - - - - -	- - - - -	1	17	3½
Total loss, 15s. 11d. per acre, - - - - -	- - - - -	0	7	11½

EXPERIMENT N° 22.

Culture, expences, and produce, of half an acre, field L*, 1766.

CULTURE.

This piece received in autumn 1764 its first earth: it was well summer-fallowed through the year 1765, receiving in all by the end of august eight clean earths and three harrowings: it was then left perfectly level and fine. The last week in september it was drilled in equally distant rows 1 foot asunder, taking 1 bushel of seed: and was then well water-furrowed. The succeeding spring and summer it was hand-hoed 5 times, and weeded once; mildewed, but not near so much as the horse-hoed crops, and reaped the last week in august. Produce, 1 qr. 4 bushels.

	EXPENCES.	£.	s.	d.
Eight ploughings, - - - - -	- - - - -	0	4	0
Three harrowings, - - - - -	- - - - -	0	0	3
Drilling, - - - - -	- - - - -	0	0	3
Seed, - - - - -	- - - - -	0	5	6
Water-furrowings, - - - - -	- - - - -	0	3	8
Five hand-hoeings, - - - - -	- - - - -	0	18	6
One weeding, - - - - -	- - - - -	0	2	6
Reaping, - - - - -	- - - - -	0	2	3
Harvesting, - - - - -	- - - - -	0	1	0
Threshing, - - - - -	- - - - -	0	6	0
		2	3	11

	£.	s.	d.
Expences, - - - - -	2	3	11
Rent, &c. - - - - -	0	17	0

3 0 11

PRODUCE.				£.	s.	d.
1 qr. 4 bush. at 45s.	-	-	-	3	7	6
Expences, - - - - -	-	-	-	3	0	11
Profit, 13s. 2d. per acre,	-	-	-	0	6	7

	£.	s.	d.
Ploughing, - - - - -	0	9	7
Harrowing, - - - - -	0	0	6½
Drilling, - - - - -	0	0	2½
Carting, - - - - -	0	0	3½
The above profit, - - - - -	0	10	7½
Loss, 8s. 1d. per acre, - - - - -	0	6	7
	0	4	0½

OBSERVATIONS.

The product of this experiment was by no means a bad one; but the unfavourableness of the season, in raising such multitudes of weeds, reduced the profit, which would otherwise have accrued, into loss, it is however observable, that this product comes in the method which is nearest allied to the broad cast way; and that circumstance, joined to the other of the comparative state of the mildewed crops, was some reason to think the common mode will prove the best in these unfavourable years; but I must confess, the very great success that attended drilling last year, makes me much surprized at its ill success this year; nor can I conceive, that an average of years will answer to the bad event of this.

EXPERIMENT N^o 23.

Culture, expences, and produce, of half an acre, field M*, 1766.

CULTURE.

This half acre received in autumn 1764 its first ploughing, was well summer-fallowed through the year 1765, receiving by the end of august nine clean earths and three harrowings, which left it perfectly level and fine. The last week in september it was drilled in equally distant rows, 1 foot asunder; the quantity of seed was one bushel. In the spring and summer, it was hand-hoed five times, and hand-weeded once. This crop was, like the rest, much mildewed, though not so much as the horse-hoed ones; it was reaped the last week in august. Produce, 1 qr. 6 bushels.

EXPEN-

EXPENCES.

	£.	s.	d.
Nine ploughings,	0	4	6
Three harrowings,	0	0	3
Drilling,	0	0	3
Seed,	0	5	6
Five hand-hoeings,	0	18	6
One weeding,	0	2	6
Reaping,	0	2	3
Harvesting,	0	1	0
Threshing,	0	6	6
	2	1	3
Rent, &c.	0	17	0
	2	18	3

PRODUCE.

	£.	s.	d.
1 qr. 6 bush. at 45s.	3	18	9
Expences,	2	18	3
Profit, 2l. 1s. per acre,	1	0	6
	£.	s.	d.
Ploughing,	0	10	9 $\frac{1}{4}$
Harrowing,	0	0	6 $\frac{3}{4}$
Drilling,	0	0	2 $\frac{1}{2}$
Carting,	0	0	3 $\frac{1}{4}$
	0	11	9 $\frac{3}{4}$
Clear profit, 17s. 4 $\frac{1}{2}$ d. per acre,	0	8	8 $\frac{1}{4}$

OBSERVATIONS.

This profit on a drilled crop must be considered as no trifle, in so unfavourable a year; but, on comparison with those of last year, it is small: I scarcely know what to conclude from the diversity of my trials; one year failing out of three, it must be allowed, is by no means an adequate reason for changing those sentiments which two years of success gave rise to.

EXPERIMENT N° 24.

Culture, expences, and produce, of a rood, field L*, 1766.

CULTURE.

The first tillage of this rood was in october 1763, when 5 loads of farm-yard dung were turned in. In the spring it was well ploughed and harrowed; and when the weeds had rose thick, they were turned down: by the end of august it had received nine ploughings and four harrowings, the last

last of which threw it into beds 6 feet broad; upon these beds, 4 cart loads of a compost, consisting of equal parts of coal ashes, mortar rubbish, and good molds, well mixed together, were spread, ploughed in at the same time that the beds were arched; and then drilled with 3 rows at 1 foot asunder. The water-furrowing was duly performed; and the corn rose so luxuriantly that I fed it off twice with sheep by the end of april. It was horse-hoed four times; hand-hoed four times, and weeded twice. In august it was much mildewed.—The product, 6 bushels, 2 pecks.

EXPENCES.

£. s. d.

Ten ploughings,	-	-	-	-	-	0	2	6
Five harrowings,	-	-	-	-	-	0	0	3
Labour, manuring, and cost of the purchased manure,	-	-	-	-	-	0	15	10
Drilling,	-	-	-	-	-	0	0	0 $\frac{1}{4}$
Water-furrowing,	-	-	-	-	-	0	1	3
Herdling,	-	-	-	-	-	0	1	0
Four horse-hoeings,	-	-	-	-	-	0	0	6
Four hand-hoeings,	-	-	-	-	-	0	8	0
Two weedings,	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	0	1	3
Harvesting,	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	0	3	3
						<hr/>		
Rent, &c.	-	-	-	-	-	1	16	7 $\frac{1}{2}$
						0	8	6
						<hr/>		
						2	5	1 $\frac{1}{4}$

PRODUCE.

£. s. d.

6 bush. and 2 pecks, at 45s.	-	-	-	-	-	1	16	6 $\frac{1}{4}$
						<hr/>		
Expences,	-	-	-	-	-	2	5	1 $\frac{1}{4}$
Produce,	-	-	-	-	-	1	16	6 $\frac{1}{4}$
						<hr/>		
Loss, 1l. 14s. 6d. per acre,	-	-	-	-	-	0	8	7 $\frac{1}{2}$

£. s. d.

Ploughing,	-	-	-	-	-	0	5	11 $\frac{1}{4}$
Harrowing,	-	-	-	-	-	0	0	5 $\frac{1}{2}$
Carting the first manure,	-	-	-	-	-	0	0	11 $\frac{1}{4}$
Drilling,	-	-	-	-	-	0	0	0 $\frac{3}{4}$
Carting second manuring,	-	-	-	-	-	0	15	1 $\frac{1}{2}$
Horse-hoeing,	-	-	-	-	-	0	0	9 $\frac{3}{4}$
Carting in harvest,	-	-	-	-	-	0	0	1 $\frac{1}{2}$
						<hr/>		
						1	3	6
						<hr/>		
Total loss, 5l. 8s. 6d. per acre,	-	-	-	-	-	1	12	1 $\frac{1}{2}$

OBSERVATIONS.

This produce is a considerable crop, and superior to what has been, in more countries than one, thought a conclusive argument for preferring the drill to the broad cast husbandry; but the great expence of the manure reduces the profit to less than nothing. I should remark, that this field was not more mildewed than the rest, which I have no doubt but it would have been, had not the young wheat been fed off in the spring.

OBSERVATIONS on the Drilled Crops of 1766.

This year has upon the whole proved very disadvantageous in the drill culture: the profit of none of the crops is worth mentioning; the loss upon most very considerable; but trials that turn out ever so unprofitable are not the less useful. It is the business of every branch of experimental philosophy to seek for truth alone, whether she be favourable or contradictory to our wishes; no method of conducting agriculture can be asserted as good, that has not stood the test of all sorts of seasons: the success of husbandry depends upon the weather; variations of it must therefore come into every account; and, for the sake of a perfect fairness of trial, I am not sorry for this unfavourable season; the average of the whole series of experiments will at last be the nearer to truth, and the conclusions then to be drawn from them the more completely useful.

This year has confirmed the experience of the last, in shewing the most beneficial method of disposing the rows --- that 3 at 1 foot asunder with 4 feet intervals is by far the most profitable method.

It has likewise given me reason, from an attentive examination of my drilled fields, to think them all in excellent order for another crop, with which they are accordingly sown: those in the common husbandry are all full of weeds, the seeds of weeds, and of a hard-bound surface. The horse-hoed ones are quite loose, and well pulverized: indeed the new husbandry cannot well be executed with more spirit than I have tried it, for I have never suffered a weed to shew his head long, nor permitted a clod to remain where a horse-hoe ever comes. I can push my walking-cane with ease a foot deep in my drilled fields, upon a less depth than which my wheat is never drilled. It is true, reducing the earth into this perfect state of culture is a very expensive business; but two years out of three have shewn that the drilled crops are sufficient to repay the whole, and leave a noble surplus for profit.

EXPERIMENT N° 25.

Culture, expences, and produce, of half an acre, field L*, 1767.

CULTURE.

This half acre is the same as was registered last year under Experiment N° 18. It was drilled again this year, for the fourth time.

I should here premise, that (for saving the reader much useless trouble) I shall be particular in specifying the exact dates of every operation, with particular remarks on the weather only in this first experiment; for, as most kinds of work are done nearly at a time, to all these small experiments one particular account will answer the end of several: if any thing the least out of the common course however occurs, I shall not fail minuting it.

Directly after harvest the old stubble was cut, raked up, and carted away; and the beds reversed by two ploughings, and harrowed fine. October 15th they were drilled in 3 rows 1 foot asunder, with 3 pecks of seed; but this operation was performed for the first time with the drill plough: that I might make no mistakes with it, I tried some experiments on it in my barn, by filling the hopper with wheat, and measuring out the quantity it shed in a given number of turns of the wheels, jolting the whole machine at the same time, in imitation of its motion at work. I was forced to enlarge the holes, through which the wheat was to fall, to make it shed enough to please me: and when I found it to answer, I set it to drill this field, which it performed very well. The piece was then well water-furrowed, and left for the winter.

April 6th in very favourable weather it received the first horse-hoeing. The 17th it was hand-hoed. The 5th of May it was horse-hoed for the second time, and the 25th again hand-hoed. June the 9th horse-hoed; and hand-hoed the 18th; the whole season rather wet, and prodigiously growing: the weeds every where arose formidably; the 21st of July it was weeded, and the 23d horse-hoed for the last time. August the 2d again hand-hoed; and the 10th weeded. Reaped the 27th. Product, 1 qr. 1 bushel; that is, 7 bushels of good wheat, and 2 of screenings.

EXPENCES.						£.	s.	d.
Cutting, &c. the stubble,	-	-	-	-	-	0	1	8
Two ploughings,	-	-	-	-	-	0	1	0
One harrowing,	-	-	-	-	-	0	0	1
Drilling,	-	-	-	-	-	0	0	1 $\frac{3}{4}$
Seed,	-	-	-	-	-	0	5	3
Water-furrowing,	-	-	-	-	-	0	0	10
Four horse-hoeings,	-	-	-	-	-	0	1	0
Four hand-hoeings,	-	-	-	-	-	0	6	0
Two weedings,	-	-	-	-	-	0	2	6
Reaping,	-	-	-	-	-	0	2	3
Harvesting,	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	0	4	0
						1	5	8 $\frac{3}{4}$
Rent, &c.	-	-	-	-	-	0	8	6
						1	14	2 $\frac{3}{4}$

PRODUCE.

	£.	s.	d.
7 bushels, at 46s.	2	0	3
Screenings,	0	8	0
	2	8	3
Expences,	1	14	2½
Profit, 1l. 8s. 0½d. per acre,	0	14	0½
	£.	s.	d.
Ploughing,	0	2	5½
Harrowing,	0	0	2½
Drilling,	0	0	1½
Horse-hoeing,	0	1	7½
Carting in harvest,	0	0	3½
	0	4	7½
Clear profit, 18s. 9d. per acre,	0	9	4½

OBSERVATIONS.

This profit in a year that was extremely unfavourable to the growth of wheat, I reckon considerable; for, the season being so very growing, the weeds arose so quick, that the expences of keeping them down are considerable, otherwise the profit would have been proportionably greater. That the land was not at all exhausted by the three preceding crops I am absolutely confident, from luxuriance of the plants, the great bulk of straw, and indeed from the product; 18 bushels *per* acre being by no means a trifling crop: the land likewise is now left in very fine order; but, unhappily for the finishing these experiments, matters, foreign to agriculture, oblige me to change the field of my enquiries—just in the vigour indeed of my pursuit, and when I hoped to be conclusive in every article of these papers.

EXPERIMENT N° 26.

Culture, expences, and produce, of half an acre, field M*, 1767.

CULTURE.

In Experiment N° 19 is registered the last year's crop on this piece. It was again drilled with wheat for the fourth time. The stubble was cut, and carried away directly after harvest. The beds reversed by two ploughings, harrowed, and sown with 3 pecks of wheat in treble rows, 1 foot asunder. In the succeeding spring and summer, it was four times horse-hoed, four times hand-hoed, and once weeded. Reaped the 27th of august. Product, 1 qr. 3 bushels; *viz.* 1 qr. good corn, and 3 bushels of screenings.

EXPEN-

EXPENCES.

	£.	s.	d.
Cutting the stubble,	0	1	8
Two ploughings,	0	1	0
One harrowing,	0	0	1
Drilling,	0	0	1½
Seed,	0	5	3
Four horse-hoeings,	0	1	0
Four hand-hoeings,	0	6	0
One weeding,	0	1	4
Reaping,	0	2	0
Harvesting, &c.	0	1	0
Threshing,	0	5	6
	1	4	11½
Rent, &c.	0	8	6
	1	13	5½

PRODUCE.

	£.	s.	d.
1 quarter,	2	6	0
Screenings,	0	9	0
	2	15	0
Expences,	1	13	5½
Profit, 2l. 3s. ½d. per acre,	1	1	6½
	£.	s.	d.
Ploughing,	0	2	5½
Harrowing,	0	0	2½
Drilling,	0	0	1½
Horse-hoeing,	0	1	7½
Carting in harvest,	0	0	3½
	0	4	7½
Clear profit, 1l. 13s. 9d. per acre,	0	16	10½

OBSERVATIONS.

This is another most profitable crop, considering the unfavourableness of the season, and the heaviness of the expence. But, from attentively remarking the progress of this crop, I have great reason to believe, that, upon an average of seasons, the most masterly culture will ensure the greatest profit; for it is with pleasure I remarked the effect of every horse and hand-hoeing and weeding; the corn evidently flourished greatly, on account of every operation. I should remark, that although both this and the preceding experiment received some very heavy showers, yet was none of it absolutely bea-

ten down, only bent and entangled. This circumstance has, in all my drilled crops, occasioned many disputes between myself and labourers, they having insisted on high prices for reaping it (indeed extravagant ones) on that account: but no work out of the common stile can be done by the piece on near such fair and reasonable terms, as common business that is already in a train: had I confined my expences to the line drawn by any writer I remember to have read, my crops would have been constantly over-run with all kinds of weeds.

EXPERIMENT N^o 27.

Culture, expences, and produce, of half an acre, field L*, 1767.

CULTURE.

The reader is desired to turn to Experiment N^o 20: that half acre was this year drilled again for the fourth time, in continuation of the experiment, viz.

One third (5 feet beds) with 2 rows, at 1 foot asunder.

One third (5 feet beds) with 3 rows 8 inches asunder.

One third (6 feet beds) with 3 rows 1 foot asunder.

Each had a peck of seed. The old stubble was cut and carried away, the beds reversed by two ploughings, and then well water-furrowed; and all the succeeding operations were performed in the same manner, and to all. It was horse-hoed four times; hand-hoed as often, and weeded twice. Reaped the 27th of august. Product,

	B. P.	
Treble rows 1 foot,	3	3
Treble rows 8 inches,	2	3
Double rows,	2	2
Total,	9	0

Account of the treble rows at 1 foot.

	EXPENCES.		
	£.	s.	d.
Cutting the stubble, &c.	0	0	11
Two ploughings,	0	0	4
One harrowing,	0	0	0½
Drilling,	0	0	0½
Seed,	0	1	9
Water-furrowing,	0	1	2
Four horse-hoeings,	0	0	4
Four hand-hoeings,	0	2	0
Two weedings,	0	0	11
Carried over,	0	7	6

	£.	s.	d.
Brought over,	0	7	6
Reaping,	0	0	8
Harvesting,	0	0	4
Threshing,	0	1	10½
	0	10	4½
Rent, &c.	0	2	10
	0	13	2½
PRODUCE.			
3 bushels, 3 pecks, at 46s.	1	1	6½
Expences,	0	13	2½
Profit, 2l. 10s. 1½d. per acre,	0	8	4½
	£.	s.	d.
Ploughing,	0	0	9¼
Harrowing,	0	0	0¾
Drilling,	0	0	0½
Horse-hoeing,	0	0	6
Carting in harvest,	0	0	1
	0	1	5½
Clear profit, 2l. 1s. 4½d. per acre,	0	6	10¾

Account of the treble rows at 8 inches.

	£.	s.	d.
EXPENCES.			
Cutting the stubble,	0	0	11
Ploughings,	0	0	4
Harrowing,	0	0	0½
Drilling,	0	0	0½
Seed,	0	1	9
Water-furrowing,	0	1	2
Horse-hoeing,	0	0	5¼
Hand-hoeing,	0	2	4
Weeding,	0	1	1
Reaping,	0	0	8
Harvesting,	0	0	4
Threshing,	0	1	4½
	0	10	5¾
Rent, &c.	0	2	10
	0	12	3¾

PRODUCE.						£.	s.	d.
2 bushels and 3 pecks, at 46s.	-	-	-	-	-	0	15	9½
Expences,	-	-	-	-	-	0	12	3½
Profit, 1l. 1s. per acre,	-	-	-	-	-	0	3	6
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	0	9½
Harrowing,	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	0	0	0½
Horse-hoeing,	-	-	-	-	-	0	0	8
Carting in harvest,	-	-	-	-	-	0	0	1
						0	1	7½
Clear profit, 11s. 3d. per acre,	-	-	-	-	-	0	1	10½

Account of the double rows.

EXPENCES.						£.	s.	d.
Cutting the stubble,	-	-	-	-	-	0	0	11
Ploughing,	-	-	-	-	-	0	0	4
Harrowing,	-	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	-	0	0	0½
Seed,	-	-	-	-	-	0	1	9
Water-furrowing,	-	-	-	-	-	0	1	2
Horse-hoeing,	-	-	-	-	-	0	0	5½
Hand-hoeings,	-	-	-	-	-	0	1	9
Weeding,	-	-	-	-	-	0	0	9
Reaping,	-	-	-	-	-	0	0	7
Harvesting,	-	-	-	-	-	0	0	4
Threshing,	-	-	-	-	-	0	1	3
						0	9	4½
Rent, &c.	-	-	-	-	-	0	2	10
						0	12	2½

PRODUCE.						£.	s.	d.
2 bush. 2 pecks, at 46s.	-	-	-	-	-	0	14	4½
Expences,	-	-	-	-	-	0	12	2½
Profit, 13s. 1½d. per acre,	-	-	-	-	-	0	2	2½
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	0	9½
Harrowing,	-	-	-	-	-	0	0	0½
Carried over,	-	-	-	-	-	0	0	10

						£.	s.	d.
Brought over,	-	-	-	-	-	0	0	10
Drilling,	-	-	-	-	-	0	0	0½
Horfe-hoeing,	-	-	-	-	-	0	0	8
Carting,	-	-	-	-	-	0	0	1
								<hr/>
							0	1 7½
Clear profit, 3s. 4½d. per acre,	-	-	-	-	-	0	0	6½
								<hr/>
						£.	s.	d.
Profit of treble rows, 1 foot afunder,	-	-	-	-	-	2	1	4½
Ditto of ditto, at 8 inches,	-	-	-	-	-	0	11	3
								<hr/>
The former superior by	-	-	-	-	-	1	10	1½
								<hr/>
Profit of treble rows, 1 foot,	-	-	-	-	-	2	1	4½
Ditto of double,	-	-	-	-	-	0	3	4½
								<hr/>
The former superior by	-	-	-	-	-	1	18	0
								<hr/>
Profit of treble rows, 8 inches,	-	-	-	-	-	0	11	3
Ditto of double,	-	-	-	-	-	0	3	4½
								<hr/>
The former superior by	-	-	-	-	-	0	7	10½

OBSERVATIONS.

The repeated agreement of these experiments in favour of the treble rows at 1 foot with 4 feet intervals is so very decisive, that I think there can remain no doubt of that method being much superior to the other upon my land, and with the preceding management. The general state of this half acre is as follows :

						£.	s.	d.
Totals,	-	-	-	-	-	2	2	5
								<hr/>
Ditto,	-	-	-	-	-	2	11	9
Expences,	-	-	-	-	-	2	2	5
								<hr/>
Profit, 2l. 16s. per acre,	-	-	-	-	-	0	9	4

Considering the wetness and unfavourableness of the season, which not only increased the expences, but diminished the crop, this profit is very great, and is a fresh and striking proof of the benefit of the drill husbandry, even in a variety of seasons.

EXPE-

EXPERIMENT N^o 28.

Culture, expences, and produce, of half an acre, field M*, 1767.

CULTURE.

This is the continuation of Experiment N^o 21; being drilled again in the same manner as before, for the fourth time.

The old stubble was cut and carried away; the beds reversed by 2 ploughings, harrowed, and drilled again as before. Horse-hoed four times, hand-hoed four times, and weeded once. Reaped the 27th of august. Product,

	Q.	P.
Treble rows, at 1 foot asunder, - - - - -	4	0
Treble rows, at 8 inches, - - - - -	2	1
Double rows, - - - - -	2	2
	<u>8</u>	<u>3</u>

Account of treble rows 1 foot asunder.

EXPENCES.

	£.	s.	d.
Cutting, &c. the stubble, - - - - -	0	0	11
Ploughing, - - - - -	0	0	4
Harrowing, - - - - -	0	0	0½
Drilling, - - - - -	0	0	0½
Seed, - - - - -	0	1	9
Four horse-hoeings, - - - - -	0	0	4
Four hand-hoeings, - - - - -	0	2	2
Weeding, - - - - -	0	0	6
Reaping, - - - - -	0	0	8
Harvesting, - - - - -	0	0	4
Threshing, - - - - -	0	2	0
	<u>0</u>	<u>9</u>	<u>1</u>
Rent, &c. - - - - -	0	2	10
	<u>0</u>	<u>11</u>	<u>11</u>

PRODUCE.

	£.	s.	d.
4 bush. at 46s. - - - - -	1	3	0
Expences, - - - - -	0	11	11
	<u>0</u>	<u>11</u>	<u>1</u>
Profit, 3l. 16s. 6d. per acre, - - - - -	3	16	6

	£.	s.	d.
Ploughing, - - - - -	0	0	9½
Harrowing, - - - - -	0	0	0½
	<u>0</u>	<u>0</u>	<u>10</u>
Carried over, - - - - -	0	0	10

Brought over,	-	-	-	-	0	0	10
Drilling,	-	-	-	-	0	0	0½
Horfe-hoeing,	-	-	-	-	0	0	6
Carting,	-	-	-	-	0	0	1
					<hr/>		
					0	1	5½
Clear profit, 2l. 17s. 9d. per acre,	-	-	-	-	0	9	7½
					<hr/>		

Account of the treble rows, 8 inches afunder.

EXPENCES.					£.	s.	d.
Cutting the stubble,	-	-	-	-	0	0	11
Ploughing,	-	-	-	-	0	0	4
Harrowing,	-	-	-	-	0	0	0½
Drilling,	-	-	-	-	0	0	0½
Seed,	-	-	-	-	0	1	9
Horfe-hoeing,	-	-	-	-	0	0	5¼
Hand-hoeing,	-	-	-	-	0	2	4
Weeding,	-	-	-	-	0	0	6
Reaping,	-	-	-	-	0	0	8
Harvesting,	-	-	-	-	0	0	4
Threshing,	-	-	-	-	0	1	1½
					<hr/>		
					0	8	5¼
Rent, &c.	-	-	-	-	0	2	10
					<hr/>		
					0	11	3¼

PRODUCE.					£.	s.	d.
2 bush. and 1 peck, at 46s.	-	-	-	-	0	12	11½
Expences,	-	-	-	-	0	11	3¼
					<hr/>		
Profit, 9s. 9d. per acre,	-	-	-	-	0	1	7½

	£.	s.	d.
Ploughing,	0	0	9¼
Harrowing,	0	0	0¾
Drilling,	0	0	0½
Horfe-hoeing,	0	0	8
Carting,	0	0	1
	<hr/>		
	0	1	7½
Neither profit nor loss,	0	0	0
	<hr/>		

Account of the double rows,
EXPENCES.

	£.	s.	d.
Cutting, &c. the stubble,	0	0	11
Ploughing,	0	0	4
Harrowings,	0	0	0½
Drilling,	0	0	0½
Seed,	0	1	9
Horse-hoeing,	0	0	5¼
Hand-hoeing,	0	1	8
Weeding,	0	0	5
Reaping,	0	0	6
Harvesting,	0	0	4
Threshing,	0	1	3
	0	7	8¼
Rent, &c.	0	2	10
	0	10	6¼

PRODUCE.

	£.	s.	d.
2 bushels and 2 pecks, at 46s.	0	14	4½
Expences,	0	10	6¼
Profit, 1l. 3s. 1½d. per acre,	0	3	10¼

	£.	s.	d.
Ploughing,	0	0	9¼
Harrowing,	0	0	0¾
Drilling,	0	0	0½
Horse-hoeing,	0	0	8
Carting,	0	0	1

0 1

Clear profit, 13s. 2½d. per acre,

0 2 2½

OBSERVATIONS.

The 3 rows at 1 foot asunder with 4 feet intervals continue regularly the best: the variations between the 3 rows at 8 inches and the double rows are so indecisive, that I can determine nothing. But the clearness of the former is great; the superiority holds not in particular seasons alone, but in both good and bad, and loamy soils and gravelly. I must therefore be allowed to think the point determined. The general state of this half acre is as follows:

EXPEN-

EXPENCES.						£.	s.	d.
The totals,	-	-	-	-	-	1	18	5½
PRODUCE.						£.	s.	d.
The totals,	-	-	-	-	-	2	10	3¼
Expences,	-	-	-	-	-	1	18	5½
Profit, 1l. 3s. 8½d. per acre,	-	-	-	-	-	0	11	10¼

This general result adds one more to the numerous instances of the great profit of the drill husbandry, and surprizes me more than articles of superior profit in more favourable years: from the experience of the last, I expected a wet season would be attended with a certain and great loss---but my mistake shews that one cannot be too cautious of reasoning upon one year by analogy with another. There are so many secret and imperceptible variations in the œconomy of nature, that the more experience we gain, I am mistaken, if we do not become proportionably more modest.

EXPERIMENT N° 29.

Culture, expences, and produce, of a rood, field L*, 1767.

CULTURE.

Ploughed for the first time in october 1765. Again in the following spring several times, and well harrowed; the weeds that succeeded turned down; and by the middle of september it had received in all nine ploughings and 3 harrowings, being left a perfect level. The last week in that month it was drilled in equally distant rows 1 foot asunder, taking 2 pecks of seed. It was then thoroughly water-furrowed. The following year it was hand-hoed five times, and weeded twice. Reaped the end of august. The product, 7 bushels.

EXPENCES.						£.	s.	d.
Nine ploughings,	-	-	-	-	-	0	2	3
Three harrowings,	-	-	-	-	-	0	0	1
Drilling,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	3	6
Water-furrowing,	-	-	-	-	-	0	0	2
Hand-hoeing,	-	-	-	-	-	0	7	6
Weeding,	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	0	1	2
Harvesting,	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	0	3	6
Rent, &c.	-	-	-	-	-	1	1	6
						0	8	6
						1	10	0

PRODUCE.						£.	s.	d.
7 bush. at 45s.	-	-	-	-	-	1	19	4½
Expences,	-	-	-	-	-	1	10	0
						<hr/>		
Profit, 1l. 17s. 6d. per acre,	-	-	-	-	-	0	9	4½
Ploughing,	-	-	-	-	0 5 5¼			
Harrowing,	-	-	-	-	0 0 3½			
Drilling,	-	-	-	-	0 0 1¼			
Carting,	-	-	-	-	0 0 1½			
						<hr/>		
						0	5	11½
						<hr/>		
Clear profit, 13s. 8d. per acre,	-	-	-	-	-	0	3	5
						<hr/>		

OBSERVATIONS.

This profit, though not so considerable as I have reaped in some preceding years, yet is not to be slighted, when so many broad cast crops proved so detrimental. A year's fallow is paid; numerous ploughings, expensive cleaning, and the land left, though not in so good order as after the horse-hoed crops, yet in much better than after the broad cast ones. In a word, this profit is for the year considerable, and must be carried to the credit of the new husbandry. But I should remark, that it would have been much greater, had not the mildew in august attacked it; the mischief to appearance was not great, but it is impossible to know the degree.

EXPERIMENT N^o 30.

Culture, expences, and produce, of a rood, field M*, 1767.

CULTURE.

Ploughed in autumn 1765, and well fallowed through the following summer, received by the middle of september nine ploughings, and three harrowings; being then left upon a level. It was drilled in equally distant rows, 1 foot asunder, and took 2 pecks of seed. The tillage while growing was five hand-hoeings, and two weedings. Reaped the last week in august. The product, 8 bushels.

EXPENCES.						£.	s.	d.
Nine ploughings,	-	-	-	-	-	0	2	3
Three harrowings,	-	-	-	-	-	0	0	1
Drilling,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	3	6
Horse-hoeing,	-	-	-	-	-	0	8	0
Weeding,	-	-	-	-	-	0	2	3
Reaping,	-	-	-	-	-	0	1	2
						<hr/>		
Carried over,	-	-	-	-	-	0	17	6

							£.	s.	d.
Brought over,	-	-	-	-	-	-	0	17	6
Harvesting,	-	-	-	-	-	-	0	0	5
Threshing,	-	-	-	-	-	-	0	4	0
							<hr/>		
							1	1	11
Rent, &c.	-	-	-	-	-	-	0	8	6
							<hr/>		
							1	10	5
							<hr/>		
PRODUCE.							£.	s.	d.
8 bushels,	-	-	-	-	-	-	2	6	0
Expences,	-	-	-	-	-	-	1	10	5
							<hr/>		
Profit, 3 <i>l.</i> 2 <i>s.</i> 4 <i>d.</i> per acre,	-	-	-	-	-	-	0	15	7
							<hr/>		
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	5	5½
Harrowing,	-	-	-	-	-	-	0	0	3½
Drilling,	-	-	-	-	-	-	0	0	1¼
Carting in harvest,	-	-	-	-	-	-	0	0	1½
							<hr/>		
							0	5	11½
							<hr/>		
Clear profit, 1 <i>l.</i> 18 <i>s.</i> 6 <i>d.</i> per acre,	-	-	-	-	-	-	0	9	7½

OBSERVATIONS.

This crop is very beneficial, and, like many of the rest, tends to the proving the great point of the profit of the new husbandry; which is thus able, in every mode, to pay very heavy expences, and leave a surplus, I may almost say unknown, in the old. The reader is not to forget how unfavourable to wheat this season was.

EXPERIMENT N^o 31.

Culture, expences, and produce, of a rood, field L*, 1767.

CULTURE.

The first ploughing was in autumn 1765: in march the second, which turned in 4 cart loads of a compost, consisting of equal parts of coal ashes, mortar, rubbish, and rotten hog-dung, brought from Bury, and well mixed together. I chose this season, that the manure might force out the weeds the more powerfully; and I think it answered in that respect very well, for in the beginning of june (after several stirrings) a vast crop of them was turned in: by the end of august it had received eight ploughings and three harrowings, being left in beds 6 feet wide. The first week in september the beds were arched up by the ninth earth, and harrowed again. And soon after drilled in 3 rows 1 foot asunder, taking a peck and half of seed. In the follow-

following spring and summer it received four horse-hoeings, four hand-hoeings and three weedings. Reaped the last week in august. The product, 7 bushels.

EXPENCES.							£.	s.	d.
Nine ploughings,	-	-	-	-	-	-	0	2	3
Four harrowings,	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	0	0	0 ¹ / ₂
Seed,	-	-	-	-	-	-	0	2	6
Labour, cost, manuring,	-	-	-	-	-	-	0	11	6
Water-furrowings,	-	-	-	-	-	-	0	0	8
Four horse-hoeings,	-	-	-	-	-	-	0	0	6
Four hand-hoeings,	-	-	-	-	-	-	0	3	2
Three weedings,	-	-	-	-	-	-	0	1	6
Reaping,	-	-	-	-	-	-	0	1	0
Harvesting,	-	-	-	-	-	-	0	0	4
Threshing,	-	-	-	-	-	-	0	3	6
							1	7	3 ³ / ₄
Rent, &c.	-	-	-	-	-	-	0	8	6
							1	15	9 ¹ / ₄

PRODUCE.							£.	s.	d.
7 bushels, at 44s.	-	-	-	-	-	-	1	18	6
Expences,	-	-	-	-	-	-	1	15	9 ¹ / ₄
Profit, 10s. 9d. per acre,	-	-	-	-	-	-	0	2	8 ¹ / ₄
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	5	5 ¹ / ₄
Harrowing,	-	-	-	-	-	-	0	0	3 ¹ / ₂
Manuring,	-	-	-	-	-	-	0	17	3 ¹ / ₂
Drilling,	-	-	-	-	-	-	0	0	0 ³ / ₄
Horse-hoeing,	-	-	-	-	-	-	0	0	9 ³ / ₄
Carting in harvest,	-	-	-	-	-	-	0	0	1 ¹ / ₂
							1	4	0 ¹ / ₄
Profit,	-	-	-	-	-	-	0	2	8 ¹ / ₄
Loss, 4l. 5s. 4d. per acre,	-	-	-	-	-	-	1	1	4

OBSERVATIONS.

This loss is considerable; but is owing to the heavy expence of manuring, which I likewise apprehend had a bad effect in mildewing this crop more than any of the preceding. It would be idle to expect, in any mode of husbandry, an uniformity of success or failure; variations must be looked for: but

but nothing could be finer than the state the field was left in after the crop; the numerous operations of cleaning, with the manure together, left it much more like a garden than a field; and this, notwithstanding its being so growing a season for the weeds.

OBSERVATIONS on the Drilled Crops of 1767.

The result of this year's experiments confirms the first opinion I entertained of the merit of this method of sowing; for, though success has not been uniform in it, yet it has, upon the whole, been greater than there was the least reason to expect at the conclusion of the year 1766. I then apprehended, that, in very wet years, drilling would prove uniformly disadvantageous; but this season, in which a prodigious quantity of rain fell, has turned out exceedingly profitable; and has advanced our experience not a little. We find in the first place, that three preceding crops have been so far from exhausting the land, that it seems now in full vigour; the last crops upon the lands successively drilled are great, and the soil is now left in a state that indicates considerable future fertility.

It is evident, from the additional trials of this year, that 3 rows at 1 foot asunder, with 4 feet intervals, are much the most profitable, and far superior to either of the other ways. It must be owned, however, that the merit of the 3 rows at 8 inch intervals, and the double rows at 1 foot, in comparison of each, remain rather in the dark; but this matter is not of much importance, as the 3 rows at 1 foot are found to be so greatly preferable to both.

The equally distant rows are profitable, but not so much as in the preceding years; this I attribute to the weight of expence in the numerous hand-hoeings and weedings, which the wetness of the season rendered necessary; which remark is indeed applicable to all these crops. I might observe, that in consequence of reading, rather than my own experience, I used 2 pecks of seed too often: a larger quantity is certainly better. Manuring this year no more than the preceding ones answers the expence---if purchased. And I much question whether it ever will; but this is conjecture.

Upon the whole, the experiments of this year are much more in favour of the new culture, than those of the last---and, upon a balance, prove more for, than against it.

GENERAL OBSERVATIONS on the preceding EXPERIMENTS.

I shall here pursue the same method as I practised in relation to the common husbandry; that is, throw the result of the preceding experiments into tables of expences, produce, profit and loss; and also into distinct ones, according to soil, method, &c. &c.

EXPEN-

EXPENCES.					£.	s.	d.	
Experiment No 1, Expences,	-	-	-	-	4	16	11½	per acre.
2,	-	-	-	-	5	0	5	
3,	-	-	-	-	9	13	6½	
4,	-	-	-	-	6	5	3	
5,	-	-	-	-	4	18	1	
6,	-	-	-	-	2	6	9½	
7,	-	-	-	-	15	18	4	
8,	-	-	-	-	5	19	3	
9,	-	-	-	-	6	0	2½	
10,	-	-	-	-	4	4	10	
11,	-	-	-	-	5	9	5	
12,	-	-	-	-	5	2	6½	
13,	-	-	-	-	5	2	10	
14,	-	-	-	-	5	8	4	
15,	-	-	-	-	2	19	1	
16,	-	-	-	-	4	9	4	
17,	-	-	-	-	5	2	4½	
18,	-	-	-	-	4	7	4	
19,	-	-	-	-	4	6	5	
20,	-	-	-	-	5	0	1½	
21,	-	-	-	-	4	10	5½	
22,	-	-	-	-	7	3	1	
23,	-	-	-	-	7	0	1½	
24,	-	-	-	-	13	14	7	
25,	-	-	-	-	3	17	9	
26,	-	-	-	-	3	16	3	
27,	-	-	-	-	4	4	10	
28,	-	-	-	-	3	16	11	
29,	-	-	-	-	7	3	10	
30,	-	-	-	-	7	5	6	
31,	-	-	-	-	11	19	4	
Average of the fums, 6l. os. 8d.					187	13	3	

PRICES of the PRODUCT.					£.	s.	d.
1764, Average price,	-	-	-	-	2	1	4½
1765, ditto,	-	-	-	-	2	1	8
1766, ditto,	-	-	-	-	2	5	1½
1767, ditto,	-	-	-	-	2	5	6½
Average, 2l. 3s. 5d.							

From

From hence it appears that 2 qrs. 6 bushels are the crop just sufficient, at this price, to pay the expence of culture.

In the above table of expences, the averages of the crops manured are as follows :

							£.	s.	d.
Experiment N ^o 3,	-	-	-	-	-	-	9	13	6½
7,	-	-	-	-	-	-	15	18	4
14,	-	-	-	-	-	-	5	8	4
24,	-	-	-	-	-	-	13	14	7
31,	-	-	-	-	-	-	11	19	4
Average, 11l. 6s. 9¼d.	-	-	-	-	-	-	56	14	1½

5 qr. 2 bush. the crop, which is just sufficient to pay this expence.

							£.	s.	d.
Total of the above table,	-	-	-	-	-	-	187	3	3
Manured crops,	-	-	-	-	-	-	56	14	1½
Unmanured,	-	-	-	-	-	-	130	9	1½

Average, 5l. 0s. 4d.

2 qr. 2 bush. and 2 pecks the quantity just sufficient to pay this expence.

							Q.	B.	P.	per acre.
Experiment N ^o 1,	-	-	-	-	-	-	2	2	0	
2,	-	-	-	-	-	-	3	0	0	
3,	-	-	-	-	-	-	1	6	0	
4,	-	-	-	-	-	-	5	4	0	
5,	-	-	-	-	-	-	4	2	0	
6,	-	-	-	-	-	-	2	6	0	
7,	-	-	-	-	-	-	2	6	0	
8,	-	-	-	-	-	-	5	0	0	
9,	-	-	-	-	-	-	4	4	0	
10,	-	-	-	-	-	-	5	0	0	
11,	-	-	-	-	-	-	3	6	0	
12,	-	-	-	-	-	-	2	7	0	
13,	-	-	-	-	-	-	3	4	0	
14,	-	-	-	-	-	-	4	4	0	
15,	-	-	-	-	-	-	2	4	0	
16,	-	-	-	-	-	-	2	4	0	
17,	-	-	-	-	-	-	3	4	0	
18,	-	-	-	-	-	-	0	6	0	
19,	-	-	-	-	-	-	1	0	1	
Carried over,	-	-	-	-	-	-	61	5	1	

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G R A I N.

Book I.

					Q.	B.	P.
Brought over,	-	-	-	-	61	5	1
20,	-	-	-	-	1	6	0
21,	-	-	-	-	1	5	0
22,	-	-	-	-	3	0	0
23,	-	-	-	-	3	4	0
24,	-	-	-	-	3	2	0
25,	-	-	-	-	2	2	0
26,	-	-	-	-	2	6	0
27,	-	-	-	-	2	2	0
28,	-	-	-	-	2	1	2
29,	-	-	-	-	3	4	0
30,	-	-	-	-	4	0	0
31,	-	-	-	-	3	4	0
					<u>95</u>	<u>1</u>	<u>3</u>

					Q.	B.	P.
Average product,	-	-	-	-	-	3	0 0
Average saving crop,	-	-	-	-	-	2	6 0
Average profit,	-	-	-	-	-	0	2 0

					£.	s.	d.	
Experiment No 2, Profit,	-	-	-	-	1	5	7	per acre.
4,	-	-	-	-	5	5	9	
5,	-	-	-	-	3	15	11	
6,	-	-	-	-	0	19	2	
8,	-	-	-	-	4	15	9	
9,	-	-	-	-	3	13	3 $\frac{1}{2}$	
10,	-	-	-	-	6	5	2	
11,	-	-	-	-	2	8	1	
12,	-	-	-	-	0	12	5 $\frac{1}{2}$	
13,	-	-	-	-	1	17	2	
14,	-	-	-	-	4	0	8	
15,	-	-	-	-	2	5	11	
16,	-	-	-	-	0	15	8	
17,	-	-	-	-	2	4	8	
23,	-	-	-	-	2	1	0	
25,	-	-	-	-	0	18	9	
26,	-	-	-	-	1	13	9	
27,	-	-	-	-	2	16	0	
28,	-	-	-	-	1	3	8 $\frac{1}{2}$	
29,	-	-	-	-	0	13	8	
Carried over,	-	-	-	-	<u>49</u>	<u>12</u>	<u>1$\frac{1}{2}$</u>	

Brought over,	£.	s.	d.
30,	49	12	1½
	1	18	6
Average, 2l. 9s. per acre,	51	10	7½
Experiment N° 1, los,	£.	s.	d.
3,	0	1	7½ per acre.
7,	6	7	0½
18,	10	2	10
19,	2	13	7
20,	1	17	6½
21,	1	0	4
22,	0	15	11
24,	0	8	1
31,	5	8	6
	4	5	4
Average, 3l. 6s. 9d.	33	0	9½
Totals of profit,	£.	s.	d.
Ditto of los,	51	10	7½
	33	0	9½
Proportional profit on 31 acres,	18	9	10
Which is per acre, 11s. 11d.			
Totals of profit,	51	10	7½
Deduct N° 14, being manured,	4	0	8
	47	9	11½
Totals of los,	33	0	9½
Deduct N° 3, 7, 24, and 31, being manured,	26	3	8½
	6	17	1
Total profit on the unmanured,	47	9	11½
Ditto los on ditto,	6	17	1
Profit on all the unmanured crops, being 26,	40	12	10½
Which is per acre, 1l. 11s. 3d.			

These experiments contain the register of four years, two of which may be called good, and two bad : they were executed on two kinds of soils, dry and wet---in several modes of sowing---and some manured richly, others in a mid-

a middling way, and many not at all: the average profit or loss upon such an extension of variations must be particularly valuable; this we find is profit *per acre* 1 *l.* 1 *s.* 1 *d.*; a sum, it is true, not considerable in itself, but, when all attending circumstances are taken into the account, perhaps will not be thought mean.

It appears that manuring the drilled crops well, by no means answers the expence; for when such are thrown out of the account, the profit rises to the considerable sum of 1 *l.* 1 *s.* 3 *d.* *per acre*, a circumstance very important to be acquainted with, that large sums of money may not be expended in manures for drilled crops, by any persons who may hereafter be inclined to enter spiritedly into that method of husbandry.

The general average product is but 3 qrs, and the average product of the five manured crops is but 3 qr. 1 bush. a superiority so trifling, that it does not prove even the benefit of the manure; but, when the great expence is taken into the account, the disproportion becomes immense.

Next let me divide these totals according to the soil of the fields.

Clayey Loam.				Q. B. P. <i>per acre.</i>		
PRODUCE.						
Experiment N ^o 1,	-	-	-	2	2	0
2,	-	-	-	3	0	0
3,	-	-	-	1	6	0
4,	-	-	-	5	4	0
9,	-	-	-	4	4	0
10,	-	-	-	5	0	0
11,	-	-	-	3	6	0
13,	-	-	-	3	4	0
14,	-	-	-	4	4	0
18,	-	-	-	0	6	0
20,	-	-	-	1	6	0
22,	-	-	-	3	0	0
24,	-	-	-	3	2	0
25,	-	-	-	2	2	0
27,	-	-	-	2	2	0
29,	-	-	-	3	4	0
31,	-	-	-	3	4	0
Average, 3 qr. 1 bush.				54	0	0
Gravelly Loam.				Q. B. P.		
Experiment N ^o 5,	-	-	-	4	2	0
6,	-	-	-	2	6	0
Carried over,	-	-	-	7	0	0

Brought over, *Q. B. P. per acre.*

7,	7	0	0
8,	2	6	0
12,	5	0	0
15,	2	7	0
16,	2	4	0
17,	2	4	0
19,	3	4	0
21,	1	0	1
23,	1	5	0
26,	3	4	0
28,	2	6	0
30,	2	1	2
	4	0	0

Average, 2 qr. 7 bush.

41 1 3

Clayey loam,	-	-	-	3	1	0
Gravelly ditto,	-	-	-	2	7	0
The former superior by	-	-	-	0	2	0

PROFIT and LOSS ⁹.

Experiment N ^o	2, Profit,	Clayey Loam.	£.	s.	d.	per acre.
4,	-	-	1	5	7	
9,	-	-	5	5	9	
10,	-	-	3	13	3½	
11,	-	-	6	5	2	
13,	-	-	2	8	1	
25,	-	-	1	17	2	
27,	-	-	0	18	9	
29,	-	-	2	16	0	
			0	13	8	

25 3 5½

Experiment N ^o	1, Loss,	£.	s.	d.	per acre.
18,	-	0	1	7½	
20,	-	2	13	7	
22,	-	1	0	4	
		0	8	1	

4 3 7½

⁹ In this account I leave out the manured crops, as they are so peculiar, that they would destroy the comparisons; but in the product, the variation was so small, that it was not worth while.

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GRAIN.

Book I.

Profit,
Loss,

£.	s.	d.
25	3	5½
4	3	7½

Average, 1l. 12s. 3d.

20	19	10

Gravelly Loam.

Experiment N° 5, Profit,

£. s. d.

per acre.

6,

3 15 11

8,

0 19 2

12,

4 15 9

15,

0 12 5½

16,

2 5 11

17,

0 15 8

23,

2 4 8

26,

2 1 0

28,

1 13 9

30,

1 3 8½

22	6	6
----	---	---

Experiment N° 19, Loss

1 17 6½

per acre.

21,

0 15 11

2	13	5½
---	----	----

Profit,

22 6 6

Loss,

2 13 5½

Clear profit,

19 13 0½

Average, 1l. 10s. 3d.

Clayey loam,

£. s. d.

1 12 3

Gravelly ditto,

1 10 3

The former superior by

0 2 0

The superiority of the clayey loam of 2 bushels and 2s. *per* acre, as it is upon a medium of four years, and a variety of seasons, both very wet, and very dry, is somewhat important. I do not however found any conclusion on it, as an *absolute* familiarity of all circumstances was not observed, the experiments not being formed for that end *alone*.—The distinction of the manured and unmanured crops will stand at one view thus:

EXPENCES.					£.	s.	d.
Average of the manured,	-	-	-	-	11	6	9 $\frac{1}{2}$
Ditto of the unmanured,	-	-	-	-	5	0	4
Excess of the former,	-	-	-	-	6	6	5 $\frac{1}{2}$
PRODUCE.					Q.	B.	P.
Average of the manured,	-	-	-	-	3	1	0
Ditto of the unmanured,	-	-	-	-	3	0	0
Superiority of the former,	-	-	-	-	0	1	0

PROFIT and LOSS.					£.	s.	d.
Profit on one manured crop,	-	-	-	-	4	0	8
Average profit on the unmanured crops,	-	-	-	-	1	11	3
Superiority of the former,	-	-	-	-	2	9	5
Average loss on manured crops,	-	-	-	-	6	10	11
Average loss on unmanured ones,	-	-	-	-	1	2	10
Superiority of the latter,	-	-	-	-	5	8	1

This comparison is clearly against the manured pieces; for, in the article of profit, the reader must be certain the average of 26 crops, against the result of a single one, is by no means fair for the former; but in that of loss, where there are two averages (though not indeed equal in the number from hence derived), the disproportion is vastly in favour of the unmanured, which in every view carries vastly the superiority.

Next it will be proper to state the comparisons between the crops which succeeded a summer fallow, and those which followed other crops.

After a fallow.					£.	s.	d.
EXPENCES.							
Experiment N ^o 1,	-	-	-	-	4	16	1 $\frac{1}{2}$ per acre.
2,	-	-	-	-	5	40	5
4,	-	-	-	-	6	25	3
5,	-	-	-	-	4	18	1
6,	-	-	-	-	2	6	9 $\frac{1}{2}$
8,	-	-	-	-	5	19	3
9,	-	-	-	-	6	10	2 $\frac{1}{2}$
11,	-	-	-	-	5	19	5
12,	-	-	-	-	5	12	6 $\frac{1}{2}$
Carried over,	-	-	-	-	45	18	

The manured crops are left out of this account.

				£.	s.	d.	
Brought over,	-	-	-	45	18	1	
13,	-	-	-	5	2	10	<i>per acre.</i>
16,	-	-	-	4	9	4	
17,	-	-	-	5	2	4	
22,	-	-	-	7	3	1	
23,	-	-	-	7	0	1½	
29,	-	-	-	7	3	10	
30,	-	-	-	7	5	6	
				89	5	1½	

Average, 5*l.* 11*s.* 6*d.*

					Q.	B.	P.	<i>per acre.</i>
Experiment N° 1,	-	-	-	-	2	2	0	
2,	-	-	-	-	3	0	0	
4,	-	-	-	-	5	4	0	
5,	-	-	-	-	4	2	0	
6,	-	-	-	-	2	6	0	
8,	-	-	-	-	5	0	0	
9,	-	-	-	-	4	4	0	
11,	-	-	-	-	3	6	0	
12,	-	-	-	-	2	7	0	
13,	-	-	-	-	3	4	0	
16,	-	-	-	-	2	4	0	
17,	-	-	-	-	3	4	0	
22,	-	-	-	-	3	0	0	
23,	-	-	-	-	3	4	0	
29,	-	-	-	-	3	4	0	
30,	-	-	-	-	4	0	0	
Average, 3Q. 4B.	-	-	-	-	57	3	0	

					£.	s.	d.	
Experiment N° 2, Profit,	-	-	-	-	1	5	7	<i>per acre.</i>
4,	-	-	-	-	5	5	9	
5,	-	-	-	-	3	15	11	
6,	-	-	-	-	0	19	2	
8,	-	-	-	-	4	15	9	
9,	-	-	-	-	3	13	3½	
11,	-	-	-	-	2	8	1	
12,	-	-	-	-	0	12	5½	
13,	-	-	-	-	1	17	2	
Carried over,	-	-	-	-	24	13	2	

					£.	s.	d.
Brought over,	-	-	-	-	24	13	2
16,	-	-	-	-	0	15	8
17,	-	-	-	-	2	4	8
23,	-	-	-	-	2	1	0
29,	-	-	-	-	0	13	8
30,	-	-	-	-	1	18	6
					<hr/>		
					32	6	8
Loss, N° 1,	-	-	-	-	0	1	7½
22,	-	-	-	-	0	8	1
					<hr/>		
					0	9	8½
					<hr/>		
Average, 17.	19s.	9d.			31	16	11½

Successive Crops.

EXPENCES.

					£.	s.	d.	
Experiment N° 10,	-	-	-	-	4	4	10	per acre.
15,	-	-	-	-	2	19	1	
18,	-	-	-	-	4	7	4	
19,	-	-	-	-	4	6	5	
20,	-	-	-	-	5	0	1½	
21,	-	-	-	-	4	10	5½	
25,	-	-	-	-	3	17	9	
26,	-	-	-	-	3	16	3	
27,	-	-	-	-	4	4	10	
28,	-	-	-	-	3	16	11	
					<hr/>			
Average, 41.	2s.	4d.			41	4	0	

PRODUCE.

Q. B. P.

Experiment N° 10,	-	-	-	-	5	0	0	per acre.
15,	-	-	-	-	2	4	0	
18,	-	-	-	-	0	6	0	
19,	-	-	-	-	1	0	1	
20,	-	-	-	-	1	6	0	
21,	-	-	-	-	1	5	0	
25,	-	-	-	-	2	2	0	
26,	-	-	-	-	2	6	0	
27,	-	-	-	-	2	2	0	
28,	-	-	-	-	2	1	2	
					<hr/>			
Average, 2 qr.	1 bush.				22	0	3	

PROFIT and Loss.

Profit and Loss.				£.	s.	d.
Experiment N ^o 10, Profit,	-	-	-	6	5	2 per acre.
15,	-	-	-	2	5	11
25,	-	-	-	0	18	9
26,	-	-	-	1	13	9
27,	-	-	-	2	16	0
28,	-	-	-	1	3	8½
				<u>15</u>	<u>3</u>	<u>3½</u>
				£.	s.	d.
Loss, N ^o 18,	-	-	-	2	13	7
19,	-	-	-	1	17	6½
20,	-	-	-	1	0	4
21,	-	-	-	0	15	11
				<u>6</u>	<u>7</u>	<u>4½</u>
Average, 17s. 6d.	-	-	-	8	15	11
				£.	s.	d.
Expences after a fallow,	-	-	-	5	11	6
Ditto after a crop,	-	-	-	4	2	4
Excess of the former,	-	-	-	1	9	2
				Q.	B.	P.
Product after a fallow,	-	-	-	3	4	0
Ditto after a crop,	-	-	-	2	1	0
The former superior by	-	-	-	1	3	0
				£.	s.	d.
Profit after a fallow,	-	-	-	1	19	9
Ditto after a crop,	-	-	-	0	17	6
The former superior by	-	-	-	1	2	3

The result of this comparison, I must own, surprizes me; for the expence of a fallow is so heavy, that I should have apprehended the first crop in the drill husbandry would ever prove the least profitable; and several writers have asserted the fact: but we find on the contrary, from the average of four seasons, that the drilled crops are much more profitable the first year than afterwards; and that by so great a superiority as 1*l.* 2*s.* 3*d.* an acre: consequently it is more advantageous to fallow the land every other year, than to drill it successively, as commonly directed; for the profit of two crops amounts to but 1*l.* 15*s.* whereas the *one* after a fallow is better by 4*s.* 9*d.* and then, if the trouble of attending a crop (so much greater than making a fallow) be considered, there certainly is no comparison between the methods.

This

This result, though nothing of it appeared before, looks a little like the fertility of the land diminishing, from being successively cropped; if not, I know not to what cause to attribute the superiority of 1 qr. 3 bush. which remains in this account upon the side of the fallow crop.

The expences, as well as the trouble, attention, and chance, are also greater with one method than another. The expence of one fallow crop is 5*l.* 11*s.* 6*d.* but that of two successive ones is 8*l.* 4*s.* 8*d.* and yet the profit of the first is superior to that of both the last.

Next I shall divide them into horse-hoed and equally distant: and reject the manured ones from the account, for the same reason as before. But as equally distant rows are always drilled after a fallow, and horse-hoed ones not always, it will be the fairest comparison to take those only which were fallowed for.

Horse-hoed Crops.

EXPENCES.

					£.	s.	d.	
Experiment N ^o 1,	-	-	-	-	4	16	1½	per acre.
2,	-	-	-	-	5	0	5	
5,	-	-	-	-	4	18	1	
6,	-	-	-	-	2	6	9½	
9,	-	-	-	-	6	0	2½	
11,	-	-	-	-	5	9	5	
12,	-	-	-	-	5	2	6½	
16,	-	-	-	-	4	9	4	
Average, 4 <i>l.</i> 15 <i>s.</i> 3 <i>d.</i>	-	-	-	-	38	2	11	

PRODUCE.

					Q.	B.	P.	
Experiment N ^o 1,	-	-	-	-	2	2	0	per acre.
2,	-	-	-	-	3	0	0	
5,	-	-	-	-	4	2	0	
6,	-	-	-	-	2	6	0	
9,	-	-	-	-	4	4	0	
11,	-	-	-	-	3	6	0	
12,	-	-	-	-	2	7	0	
16,	-	-	-	-	2	4	0	
Average, 3 qr. 1 bush. 3 pecks,	-	-	-	-	25	7	0	

PROFIT and Loss.

					£.	s.	d.	
Experiment N ^o 2, Profit,	-	-	-	-	1	5	7	per acre.
5,	-	-	-	-	3	15	11	
Carried over,	-	-	-	-	5	1	6	

	£.	s.	d.	
Brought over,	5	1	6	
6,	0	19	2	per acre.
9,	3	13	3½	
11,	2	8	1	
12,	0	12	5½	
16,	0	15	8	
	13	10	2	
Loss, N ^o 1,	0	1	7½	
Average, 1l. 13s. 6d.	13	8	6½	

Equally distant rows.

	EXPENCES.	£.	s.	d.	
Experiment N ^o 4,	-	6	5	3	per acre.
8,	-	5	19	3	
13,	-	5	2	10	
17,	-	5	2	4	
22,	-	7	3	1	
23,	-	7	0	1½	
29,	-	7	3	10	
30,	-	7	5	6	
Average, 6l. 7s. 9d.	-	51	2	2½	

	PRODUCE.	Q.	B.	P.	
Experiment N ^o 4,	-	5	4	0	per acre.
8,	-	5	0	0	
13,	-	3	4	0	
17,	-	3	4	0	
22,	-	3	0	0	
23,	-	3	4	0	
29,	-	3	4	0	
30,	-	4	0	0	
Average, 3 qr. 7½ bush.	-	31	4	0	

	Profit and Loss.	£.	s.	d.	
Experiment N ^o 4, Profit,	-	5	5	9	per acre.
8,	-	4	15	9	
Carried over,	-	10	1	6	

				£.	s.	d.
Brought over,	-	-	-	10	1	6
13,	-	-	-	1	17	2
17,	-	-	-	2	4	8
23,	-	-	-	2	1	0
29,	-	-	-	0	13	8
30,	-	-	-	1	18	6
				18	16	6
Loss, N° 22,	-	-	-	0	8	1
Average, 2l. 6s.	-	-	-	18	8	5

				£.	s.	d.
Expence of equally distant,	-	-	-	-	6	7
Ditto of horse-hoed,	-	-	-	-	4	15
Excess of the former,	-	-	-	-	1	12
				Q.	B.	P.
Product of equally distant,	-	-	-	-	3	7
Ditto of horse-hoed,	-	-	-	-	3	1
Superiority of the former,	-	-	-	-	0	5
				£.	s.	d.
Profit of equally distant,	-	-	-	-	2	6
Ditto of horse-hoed,	-	-	-	-	1	13
Superiority of the former,	-	-	-	-	0	12

This comparison is very important: both methods here succeed a fallow year; manuring is rejected, and the result by no means fallacious. The equally distant rows are found much the most productive and profitable; and as the horse-hoed crops were before proved to be best after a fallow, and most profitable, it consequently follows, that fallowing every other year, and sowing the land in equally distant rows, will prove more profitable than horse-hoeing the wheat, in any method of management specified in these papers.

It now only remains to draw into one view, the comparison of the number and distance of the rows, under the three heads of expences, product, and profit and loss.

Three rows at 1 foot, with 4 feet intervals.

EXPENCES.				£.	s.	d.	
Experiment N° 11,	-	-	-	5	11	0	per acre.
12,	-	-	-	5	5	1½	
20,	-	-	-	5	1	1½	
21,	-	-	-	4	13	1½	
27,	-	-	-	4	8	0	
28,	-	-	-	4	0	3	
Average, 4l. 16s. 5d.	-	-	-	28	18	7½	

PRODUCE.				Q.	B.	P.	
Experiment N° 11,	-	-	-	4	4	0	per acre.
12,	-	-	-	3	1	2	
20,	-	-	-	2	0	2	
21,	-	-	-	2	0	2	
27,	-	-	-	2	6	2	
28,	-	-	-	3	0	0	
Average, 2 qr. 7 bush. 2 pecks,	-	-	-	17	5	0	

PROFIT and LOSS.				£.	s.	d.	
Experiment N° 11, Profit,	-	-	-	3	18	0	per acre.
12,	-	-	-	1	2	4½	
21,	-	-	-	0	4	4½	
27,	-	-	-	2	1	4½	
28,	-	-	-	2	17	9	
Loss, N° 20,	-	-	-	10	3	10½	
Average 1l. 13s. 4d.	-	-	-	0	3	7½	
	-	-	-	10	0	3	

Three rows at 8 inches, with 3 feet 8 inches intervals.

EXPENCES.				£.	s.	d.	
Experiment N° 11,	-	-	-	5	12	10½	
12,	-	-	-	5	4	10½	
20,	-	-	-	5	6	3	
21,	-	-	-	4	15	0	
27,	-	-	-	4	3	7½	
28,	-	-	-	3	17	7½	
Average, 4l. 16s. 8d.	-	-	-	29	0	3	

PRODUCE.					Q. B. P.	
Experiment N° 11,	-	-	-	-	3 6 0	per acre.
12,	-	-	-	-	2 6 2	
20,	-	-	-	-	1 5 2	
21,	-	-	-	-	1 4 0	
27,	-	-	-	-	2 0 2	
28,	-	-	-	-	1 5 2	
Average, 2 qr. 2 bush.	-	-	-	-	13 4 0	

PROFIT and LOSS.					£. s. d.	
Experiment N° 11, Profit,	-	-	-	-	2 4 7½	per acre.
12,	-	-	-	-	0 7 7½	
27,	-	-	-	-	0 11 3	
					3 3 6	
Loss, N° 20,	-	-	-	1 10 4½		
21,	-	-	-	1 7 6		
					2 17 10½	
Average, 11¼d.	-	-	-	-	0 5 8½	

Two rows at 1 foot with 4 feet intervals.

EXPENCES.					£. s. d.	
Experiment N° 11,	-	-	-	-	5 4 4½	per acre.
12,	-	-	-	-	4 17 7½	
20,	-	-	-	-	4 13 0	
21,	-	-	-	-	4 3 3	
27,	-	-	-	-	4 2 10½	
28,	-	-	-	-	3 12 10½	
Average, 4l. 9s.	-	-	-	-	26 14 0	

PRODUCE.					Q. B. P.	
Experiment N° 11,	-	-	-	-	3 0 0	per acre.
12,	-	-	-	-	2 7 0	
20,	-	-	-	-	1 4 0	
21,	-	-	-	-	1 2 2	
27,	-	-	-	-	1 7 0	
28,	-	-	-	-	1 7 0	
Average, 2 qr. and 2 pecks,	-	-	-	-	12 3 2	

PROFIT and LOSS.

Experiment N^o 11, Profit,

12,

27,

28,

Loss, N^o 20,

21,

£. s. d.

1 1 7½ per acre.

0 7 4½

0 3 4½

0 13 2½

2 5 7

1 7 0

1 4 7½

2 11 7½

Loss,

Profit,

£. s. d.

2 11 7½

2 5 7

Average, 15.

0 6 0½

Expences of 3 rows at 8 inches,

Ditto 1 foot,

4 16 8

4 16 5

Excess of the former,

0 0 3

Expences of 3 rows at 8 inches,

Ditto of double ones,

4 16 8

4 9 0

Excess of the former,

0 7 8

Expences of 3 rows at 1 foot,

Ditto of double,

4 16 5

4 9 0

Excess of the former,

0 7 5

Product of 3 rows at 1 foot,

Ditto of ditto at 8 inches,

Q. B. P.

2 7 2

2 2 0

Superiority of the former,

0 5 2

Product of 8 rows at 8 inches,

Ditto of double,

2 2 0

2 0 2

Superiority of the former,

0 1 2

Product of 3 rows at 1 foot,

Ditto of double,

2 7 2

2 0 2

Superiority of the former,

0 7 0

	£.	s.	d.
Profit on 3 rows at 1 foot,	1	13	4
Ditto on 3 rows at 8 inches,	0	0	11½
Superiority of the former,	1	12	4½
Profit on 3 rows at 8 inches,	0	0	11½
Loss on double,	0	1	0
Superiority of the former,	0	1	11½
Profit on 3 rows at 1 foot,	1	13	4
Loss on double,	0	1	0
Superiority of the former,	1	14	4

From this comparison it is evident, that the 3 rows at 1 foot asunder are much the most profitable;---that 3 rows at 8 inches are more advantageous than the double ones, though the profit on them is so trifling; that these methods do not seem much to vary in merit.

Upon the whole, I should in general remark, that drilling wheat, through the period of these four years, has proved extremely profitable, and that under a variety of circumstances relative both to weather and management. I can by no means pretend that this series of trials has been sketched out and conducted with that penetration and keen eye to discoveries, which some modern writers have displayed in their works: I am sensible of the many imperfections in any register of experiments that does not embrace a longer period of time; and on that account I never thought of laying these papers before the publick, till I left Suffolk. Had it been in my power to have conducted this series in particular through ten or twelve years, I think in that time an absolute certainty would have attended each conclusion. Not however that this point is clear; for at the end of twenty years variations might be so numerous, as to puzzle many inferences.

One circumstance I am very confident of;---that I have given the new husbandry in the culture of wheat a fair and candid trial; I have given it every advantage; and more in many instances than its most sanguine defenders demand. It has certainly repaid me excellently for all this attention and expence; and I am much mistaken, if it ever answers well without peculiar attention.

Others may be more fortunate than I have been, in more points than one: my soil in one field required a very great expence in water-furrowing an object I am much surprized has not been before remarked by authors. M. De Chateauxvieux speaks of drilling strong clays, and yet is silent on this head. The first horse-hoeing partly fills up these drains, and then they must be emptied again.

My drilling by hand for such a time was extremely tedious, and monstrously expensive: and when I gained a drill plough, I was full of hope; but the implement did not perform as I could wish: the repairs were numerous, and expensive; and it would have been demolished twenty times, had I not always attended it to the field myself.

Much useless writing has, I think, been bestowed upon horse-hoes: I have tried several (of which, in the proper place) but found none comparable to the common Suffolk plough, which performs all the operations of hoeing to and from the plants, and opening a deep furrow, excellently: add to this, the expence is lessened, by using a common instrument, and the whole business more simplified.

The wheat of the drilled crops is better than of the common ones; but I cannot assert that I found this superiority so great as many have asserted it.

In all these experiments the land is left in very fine order, even the equally distant rows; but the horse-hoed soil is like a garden, and vastly superior, after four crops, to the state of a fallow in the fields of a common farmer.

In a word, I cannot but highly recommend the drill husbandry in the culture of wheat, and earnestly beg of the lovers of agriculture to try it fairly: I have no doubt of their success.

A great number of trials, comparison of the two methods, have been published; the Society for the encouragement of arts, manufactures, and commerce, have offered premiums for comparative experiments; and yet how much do we remain in the dark! That excellent cultivator Sir Digby Leyland has presented the point to some gentlemen, upon a rich light sandy loam, with a series of very judicious experiments; but as he has proved the drill culture to be very advantageous upon such soil, and I recollect right, none of us gentlemen are absolutely and merely convinced, and continued for several years. The same observation is applicable to Baker's trials in Ireland, and elsewhere excepted. I know more that has been attended to; they are the following experiments the comparison is made in the time of culture, and consequently the soil every time is the same; the time of culture, and every circumstance equal in both, which cannot, in a like manner, be made with larger trials. I proceed without further pretence, to my present subject.

My drilling by hand is such a time was extremely tedious, and monstrous-ly expensive; and when I gained a drill plough, I was full of hope; but the implement did not perform as I could wish; the repairs were numerous, and expensive; and it would have been demolished twenty times, had I not always attended it to the field myself.

Much more writing has, I think, been bestowed on the drill, than have tried several (of which, in the proper place) but found none comparable to the common Suffolk plough, which performs all the operations of hoeing to and from the plant, and opening a deep furrow, excellently add to this, the expense is lessened, by using a common instrument, and the whole business more simplified.

COMPARISON between the old and new HUSBANDRY, in the CULTURE of WHEAT.

THE subject of this section I consider as very important; the great dispute among modern writers of agriculture is this comparison, which very few of them have had the temper coolly to examine in an experimental manner. It has been the fate of the drill husbandry, to be either condemned or praised in an excessive manner; and prejudice of this nature is of pernicious effect in every branch of philosophy, natural as well as moral. Tull had the honour of introducing it in England, and was by many thought the father of it; it is therefore no wonder that he was a prejudiced writer, the common vanity of mankind is a sufficient solution of his conduct; but why one method more than another should have captivated succeeding authors, is difficult to account for.

A great number of trials, in comparison of the two methods, have been published; the Society for the encouragement of arts, manufactures, and commerce, have offered premiums for comparative experiments; and yet how much do we remain in the dark! That excellent cultivator Sir Digby Legard has reduced the point to some certainty, upon a rich light sandy loam, by a series of very judicious experiments; that is, he has proved the drill culture to be very advantageous upon such a soil; but, if I recollect right, none of his experiments are absolutely and merely *comparative*, and continued for several years. The same observation is applicable to Mr. Baker's trials in Ireland; and, these two excepted, I know none that deserve mention.

In the following experiments the *comparison* is minutely attended to; they are *in small*, and consequently the soil *exactly* the same; the time of culture, and, in a word, every circumstance equal in both: which cannot, in a like degree, be the case with larger trials. I proceed, without farther preface, to lay them before the reader.

EXPERIMENT N^o 1.

Culture, expences, and produce, of one acre, in two divisions,
field L*, 1764.

CULTURE.

The tillage of this acre began in autumn 1762, when it received one ploughing. By may-day 1763, it received two ploughings more. In June it was stirred twice; once more in July: another the first week in September, which left the acre level. It was then struck into two equal parts, of half an acre each; one of which was ploughed into beds five feet wide, and harrowed, the other into common ridges; the last week of that month, the half acre in beds was upsetted and drilled with 3 pecks of wheat, in 3 rows on the top of each bed, 8 inches asunder; and the other half sown with 4 pecks of the same wheat, in common manner, on the same day.

As soon as the acre was sown, it was water-furrowed equally, by cuts that were made quite across it.

The middle of March, the rows were hand-hoed with hoes 4½ inches wide; and in about a week after, the first horse-hoeing was given; after which this half acre was again water-furrowed.

The middle of May, it was horse-hoed a second time; the end of the same month hand-hoed again. The middle of June horse-hoed it a third time, and in a week hand-hoed it for the third time. The beginning of July, horse-hoed it for the fourth and last time.

All the culture bestowed upon the other half acre, was that of cutting out some thistles with a hook in June.

The last week in August they were both reaped on the same day, and directly threshed.

				Q. B. P.		
The product of the drilled, was	-	-	-	1	0	1
That of the broad cast,	-	-	-	1	0	0
Superiority of the drilled, 2 pecks per acre				0	0	1

Account of the broad cast half acre.

EXPENCES.				£.	s.	d.
Nine ploughings,	-	-	-	0	4	6
Seed,	-	-	-	0	4	6
Sowing,	-	-	-	0	0	3
Water-furrowing twice,	-	-	-	0	4	0
Thistling,	-	-	-	0	1	0
Reaping,	-	-	-	0	2	6
Carried over,	-	-	-	0	16	9

	EXPENSES	£	s	d
Brought over,		0	6	9
Harvesting,		0	1	3
Threshing,		0	2	0

The tillage of this acre began in autumn 1762, when it received one ploughing. By May-day 1763, it received two ploughings more. It was then turned twice; once more in July; another the first week in September. It was then struck into two equal parts. One half an acre each; one of which was ploughed into beds five feet wide, and the other into common ridges. The last week of that month, the half acre beds were uprooted and drilled with 3 pecks of wheat, on the top of each bed, 2 inches standing; and the other half a peck of the same wheat, in common manner, on the same day.

	PRODUCE	£	s	d
1 quarter,		2	1	0
Expences,		1	17	0
Profit, 8s. per acre,		0	4	0

As soon as the acre was sown, it was water-furrowed and made into ridges. The middle of March, the rows were hand-hoeed with a hoe, and about a week after, the half acre being wide, and the half acre being water-furrowed.

		£	s	d
Ploughing,		0	6	9
Carting in harvest,		0	1	1
The above profit,		0	4	0
Loss, 5s. 9d. per acre,		0	5	9

Account of the drilled half acre.

	EXPENSES	£	s	d
Nine ploughings,		4	6	0
One harrowing,		0	0	2
Seed,		0	3	4
Drilling,		0	0	0
Water-furrowing thrice,		0	6	0
Three hand-hoeings,		0	3	9
Four horse-hoeings,		0	1	4
Reaping,		0	2	3
Harvesting,		0	1	0
Threshing,		0	2	1

		£	s	d
Rent, &c.		1	4	5
		0	17	0

PRODUCE

PRODUCE.

1 qr. 1 peck, at 42s.

Expences,

Profit, 3s. 4d. per acre,

	£.	s.	d.
Ploughing, - - - - -	0	6	9
Harrowing, - - - - -	0	0	1½
Drilling, - - - - -	0	0	0½
Horse-hoeing, - - - - -	0	0	10
Carting in harvest, - - - - -	0	0	1½
			<hr/>
			0 7 11
The above profit, - - - - -			0 1 8
			<hr/>
Loss, 12s. 6d. per acre, - - - - -			0 6 3

COMPARISON.

	£.	s.	d.
Loss by the drilled, - - - - -	0	6	3
Ditto by the broad cast, - - - - -	0	2	10½
			<hr/>
Superiority of the latter, - - - - -			0 3 4½

OBSERVATIONS.

I know of no circumstance, in which this comparison is not exact; for though a sample of each product (my constant rule in all comparative experiments) was sent the same day to market for fixing the price, and it is charged accordingly, the result is in favour of the common method; but it is not decisive enough to determine the point. I should remind the reader, that I am not drawing a comparison between the two methods in general; but only in the culture of wheat; if I was, the experiment would be continued for more years. I shall hereafter insert the experiments to that purpose. For which reason I do not here notice the state the land is left in after each method, that having nothing to do with the present enquiry.

EXPERIMENT N° 2.

Culture, expences, and produce, of half an acre, in two divisions,
field L*, 1764.

CULTURE.

This piece was first ploughed in the autumn of 1762. In spring 1763 it was stirred three times more, and during the following summer three more ploughings were given: the middle of september it had the eighth, which threw half of it on to beds 5 feet wide, and half of it on to common ridges a yard wide. The last week of that month, and on the same day, the first was arched up, and drilled with a peck and half of wheat in 3 rows 8 inches afunder,

afunder, and the other ploughed and sown in the common manner with 2 pecks of the same wheat; and the piece then equally water-furrowed.

In the succeeding year the broad cast rood was thiftled once: the drilled one horse-hoed four times, hand-hoed three times, and hand-weeded once. They were both reaped on the same day, the latter end of august, and threshed.

	Q.	B.	P.
Product of the drilled,	-	-	-
Ditto of the broad cast,	-	-	-
Superiority of the former,	-	-	-

Account of the drilled rood.

EXPENCES.

	£.	s.	d.
Nine ploughings,	0	2	3
One harrowing,	0	0	1
Drilling,	0	0	0 $\frac{3}{4}$
Seed,	0	1	8
Water-furrowing thrice,	0	1	6
Three hand-hoeings,	0	3	0
One weeding,	0	0	6
Four horse-hoeings,	0	0	8
Reaping,	0	1	1 $\frac{1}{2}$
Harvesting,	0	1	0
Threshing,	0	1	6
	0	16	2 $\frac{3}{4}$
Rent, &c.	0	8	6
	1	4	8 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
5 bush. at 42s.	1	6	3
Expences,	1	4	8 $\frac{1}{4}$

Profit per acre, 6s. 1d.	0	1	6 $\frac{1}{4}$
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	£.	s.	d.
Ploughing,	0	3	4 $\frac{1}{2}$
Harrowing,	0	0	0 $\frac{3}{4}$
Drilling,	0	0	0 $\frac{1}{2}$
Horse-hoeing,	0	0	5
Carting in harvest,	0	0	0 $\frac{3}{4}$
	0	3	11 $\frac{1}{2}$
The above profit,	0	1	6 $\frac{1}{4}$
Loss, 9s. 9d. per acre,	0	2	5 $\frac{1}{4}$

Account of the broad cast root.

EXPENCES.		£.	s.	d.
Nine ploughings,	-	0	2	3
Seed,	-	0	3	7½
Sowing,	-	0	0	1½
Water-furrowing twice,	-	0	1	0
Thistling,	-	0	0	6
Reaping,	-	0	0	3
Harvesting,	-	0	0	7
Threshing,	-	0	1	0
Rent, &c.	-	0	9	4
		0	17	10
PRODUCE.		£.	s.	d.
4 bushels, at 4s.	-	1	0	6
Expences,	-	0	17	10
Profit, 10s. 8d. per acre,	-	0	2	8

					£.	s.	d.
Ploughing,	-	-	-	-	0	3	4½
Carting in harvest,	-	-	-	-	0	0	0½
The above profit,	-	-	-	-	0	3	5½
Loss, 3s. 1d. per acre,	-	-	-	-	0	0	9½
COMPARISON.					£.	s.	d.
Loss by the drilled,	-	-	-	-	0	9	9
Ditto by the broad cast,	-	-	-	-	0	3	1
Latter superior by	-	-	-	-	0	6	8

OBSERVATIONS.

The expences of the drilled crops are so high, that the broad cast one continues superior in profit, though the product is so much less. This proves that the writers, who have insisted so much on the new being as cheap as the old husbandry, either are mistaken, or practised drilling in a very incomplete manner: in no instance did I expend, to my knowledge, an unnecessary shilling; for had not all the horse-hoeings, hand-hoeings, and weedings, been thus thoroughly performed, I should by no means have given the method a fair trial. I understand the very principle of the new husbandry to be the perfect

perfect eradication of weeds, and the keeping the soil in the finest degree of pulverization.

EXPERIMENT N^o 3.

Culture, expences, and produce, of half an acre, in two divisions, field L*, 1764.

CULTURE.

Ploughed for the first time in autumn 1762; in spring 1763 twice more, and harrowed twice. In the following summer it received three earths more. The first week in september it was struck into two equal parts, and one half ploughed into 5 feet ridges, the other into 3 feet ones; the week after, the whole was equally manured with 8 loads of a compost of coal ashes, mortar, rubbish, and virgin moulds, mixed together in equal quantities. The end of the same month, the five feet beds were arched up, harrowed, and drilled in three rows, 8 inches asunder, with a peck and half of wheat; and the common ridges ploughed and sown with 2 pecks of the same wheat, on the same day; and the whole water-furrowed. The succeeding year, the broad cast rood was thistled twice; and the drilled one horse-hoed four times, hand-hoed three times, and hand-weeded once. They were reaped on the same day, the first week in september; the broad cast somewhat laid, but the drilled upright.

					2. B. P.
Product of the broad cast,	-	-	-	-	7 6
Ditto of the drilled,	-	-	-	-	5 1
Superiority of the former,	-	-	-	-	1 3

Account of the broad cast rood.

EXPENCES.

	£.	s.	d.
Eight ploughings,	0	2	0
Two harrowings,	0	0	2
Labour, manuring, and cost of the ashes and mortar,	0	7	3
Seed,	0	2	7 1/2
Sowing,	0	0	1 1/2
Water-furrowing twice,	0	1	0
Thistling twice,	0	1	0
Reaping,	0	1	3
Harvesting,	0	0	8
Threshing,	0	1	9
	0	17	10
Rent, &c.	0	8	6
	1	6	4

PRODUCE.					£.	s.	d.
7 bushels, at 41s.	-	-	-	-	1	15	10½
Expences,	-	-	-	-	1	6	4
Profit, 1l. 18s. 2d. per acre,	-	-	-	-	0	9	6½
					£.	s.	d.
Ploughing,	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	0	0	1½
Carting manure,	-	-	-	-	0	6	11¼
Carting in harvest,	-	-	-	-	0	0	0½
The above profit,	-	-	-	-	0	9	6½
Loss 2s. 4d. per acre,	-	-	-	-	0	0	7

Account of the drilled rood.

EXPENCES.					£.	s.	d.
Eight ploughings,	-	-	-	-	0	2	0
Three harrowings,	-	-	-	-	0	0	3
Manuring,	-	-	-	-	0	7	3
Seed,	-	-	-	-	0	1	8
Drilling,	-	-	-	-	0	0	0½
Water-furrowing thrice,	-	-	-	-	0	1	6
Four horse-hoeings,	-	-	-	-	0	0	8
Three hand-hoeings,	-	-	-	-	0	1	10½
One weeding,	-	-	-	-	0	0	4
Harvesting,	-	-	-	-	0	0	5
Reaping,	-	-	-	-	0	1	3
Threshing,	-	-	-	-	0	1	3½
Rent, &c.	-	-	-	-	0	18	7
	-	-	-	-	0	8	6
	-	-	-	-	1	7	1
PRODUCE.					£.	s.	d.
5 bushels, 1 peck, at 41s.	-	-	-	-	1	5	7½
Expences,	-	-	-	-	1	7	1
Produce,	-	-	-	-	1	5	7½
Loss,	-	-	-	-	0	1	5½
2	-	-	-	-			
	-	-	-	-			

Ploughing,

	£.	s.	d.
Ploughing, - - - - -	0	3	0
Harrowing, - - - - -	0	0	2½
Carting manure, - - - - -	0	6	11¼
Drilling, - - - - -	0	0	0½
Horse-hoeing, - - - - -	0	0	5
Carting in harvest, - - - - -	0	0	0¾
Loss as before, - - - - -			0 10 7½
Total loss, 2l 8s. 5d. per acre, - - - - -			0 12 1½

COMPARISON.

	£.	s.	d.
Loss by drilled, - - - - -	2	8	5
Ditto by broad cast, - - - - -	0	2	4
Latter superior by - - - - -	2	6	1

OBSERVATIONS.

This is a very great superiority, and certainly proves much in favour of the common husbandry; indeed it was to be expected that 16 or 18 inches of corn out of 5 feet could not draw an equal nourishment from the manure, with a crop spread over the whole ground; and yet reason is so often mistaken in matters of husbandry, that it is never fully to be trusted, not even in deducing the extent of consequences evident from experiment itself. We must not therefore reason too much, even on these experiments, notwithstanding their being decisive as far as they extend.

EXPERIMENT N^o 4.

Culture, expences, and produce, of half an acre, in two divisions, field M*, 1764.

CULTURE.

Ploughed once in autumn 1762. Again in the spring of 1763. Four times more in the following summer. Struck into two equal parts the first week in september, and one thrown into 5 feet beds, the other into common ridges. The middle of that month arched up the first, and drilled it in 3 rows on each ridge 8 inches asunder, with 3 pecks of wheat: and the same day ploughed and sowed the other half with a bushel of the same grain.

The following spring and summer the broad cast was thiftled once; and the drill horse-hoed four times, and hand-hoed thrice. Reaped the whole the last week in august.

	Q.	B.	P.
Product of the drilled, - - - - -	0	7	0
Ditto of the broad cast, - - - - -	0	7	3
Superiority of the latter, - - - - -	0	0	3

Account of the broad cast half acre.

EXPENCES.		
Eight ploughings,	- - - - -	0 4 0
Seed,	- - - - -	0 4 6
Sowing,	- - - - -	0 0 3
Thistling,	- - - - -	0 0 9
Reaping,	- - - - -	0 2 0
Harvesting,	- - - - -	0 2 2
Threshing,	- - - - -	0 1 6
		0 10 0
Rent, &c.	- - - - -	0 17 0
		1 11 5

PRODUCE.		
7 bush. and 3 pecks, at 42s.	- - - - -	2 0 8
Expences,	- - - - -	1 11 5
Profit, 18s. 4½d. per acre,	- - - - -	0 9 2½

Ploughing,	- - - - -	0 6 8
Carting in harvest,	- - - - -	0 0 1½
		0 6 1½
Profit, 6s. 1d. per acre,	- - - - -	0 3 0½

Account of the drilled half acre.

EXPENCES.		
Eight ploughings,	- - - - -	0 4 0
One harrowing,	- - - - -	0 0 2
Seed,	- - - - -	0 3 4½
Drilling,	- - - - -	0 0 1½
Four horse-hoeings,	- - - - -	0 1 4
Three hand-hoeings,	- - - - -	0 3 6
Reaping,	- - - - -	0 1 9
Harvesting,	- - - - -	0 0 9
Threshing,	- - - - -	0 1 9
		0 16 9
Rent, &c.	- - - - -	0 17 0
		1 13 9

Account of the produce of half an acre		£.	s.	d.
7 bushels, at 42s.	-	1	16	9
Expences,	-	1	13	9
Profit, 5s. 11½d. per acre,	-	0	2	11½
		£.	s.	d.
Ploughing,	-	0	6	0
Harrowing,	-	0	0	1½
Drilling,	-	0	0	1½
Horse-hoeing,	-	0	0	10
Carting in harvest,	-	0	0	1½
The above profit,	-	0	2	11½
Loss, 8s. 6½d. per acre,	-	0	4	3½
COMPARISON.		£.	s.	d.
Profit by the broad cast,	-	0	3	0½
Loss by the drilled,	-	0	4	3½
Superiority of the former,	-	0	7	3½

OBSERVATIONS.

This drilled crop had so indifferent an appearance most of the season, that I was surprized to find it produce so much. Yet the broad cast method continues superior, and offers matter for reflection, not favourable to drilling; but we must not absolutely conclude from one year's experience; if we were, the common method, it is plain, would bear away the palm; and I must think that the new way will never be found to equal the old.

EXPERIMENT N° 5.

Culture, expences, and produce, of half an acre, in two divisions, field M*, 1764.

CULTURE.

Ploughed for the first time in october 1762. The following year, it received four more earths. The middle of september, it was thrown into beds 5 feet wide, and half into common ridges. The end of the same month, the 5 feet ones were arched, harrowed up, and drilled with 3 rows of wheat, 8 inches asunder, taking a peck and half; and the 3 feet ones ploughed and sown in common, with 2 pecks.

The following year the broad cast rood was thistled once, and the drilled horse-hoed four times, and hand-hoed three times; reaped the same day.

Product,

	£.	s.	d.
Brought over,	0	4	0
Sowing,	0	0	1½
Thistling,	0	0	4
Reaping,	0	1	0
Harvesting,	0	0	8
Threshing,	0	1	9
	0	7	10½
Rent, &c.	0	8	6
	0	16	4½

PRODUCE.

	£.	s.	d.
7 bushels, at 42s.	1	16	9
Expences,	0	16	4½
Profit, 4l. 1s. 6d. per acre,	1	0	4½

	£.	s.	d.
Ploughing,	0	2	7½
Carting in harvest,	0	0	0¼
	0	2	8¼

Clear profit, 3l. 10s. 9d. per acre,	0	17	8¼
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COMPARISON.

	£.	s.	d.
Profit by the drilled,	5	3	2
Ditto by the broad cast,	3	10	9
Superiority of the former,	1	12	5

OBSERVATIONS.

This trial is greatly in favour of the drill culture: such a superiority as 1l. 12s. 5d. per acre, notwithstanding an excess of expences, is very important, and tends much to contradict the idea which the result of the preceding experiments had caused me to entertain. I think it a point of great consequence in favour of the new method (in answer to its enemies), to find, on minute comparison with the old, in the culture of wheat, that it turns out in any instance more beneficial; and much more so, in so material a one as this.

EXPERIMENT N° 6.

Culture, expences, and produce, of half an acre, in two divisions,
field M*, 1764.

CULTURE.

The tillage of this half acre was like the preceding in most respects. I received the first ploughing in november 1762: was stirred four times more in the following spring and summer; the sixth earth threw half of it into 5 feet ridges, and the other half into 3 feet ones. Ten loads of coal ashes, very rotten dung, and moulds fixed together were then spread on the whole. The first week in october, the five feet ones were arched, harrowed, and drilled with 3 rows 8 inches asunder, taking a peck and half of seed; and the others were ploughed and sowed in the common way, with 2 pecks.

The broad cast rood was thiftled once the succeeding year; the drilled horse-hoed four times, and hand-hoed thrice: both reaped the same day; the product,

	Q.	B.	P.
Of the broad cast,	-	-	-
Of the drilled,	-	-	-
Superiority of the former,	-	-	-

Account of the broad cast rood.

EXPENCES.						£.	s.	d.
Seven ploughings,	-	-	-	-	-	0	1	9
Seed,	-	-	-	-	-	0	2	3
Labour, and cost of the manure,	-	-	-	-	-	0	12	0
Sowings,	-	-	-	-	-	0	0	11
Thiftling,	-	-	-	-	-	0	0	6
Reaping,	-	-	-	-	-	0	1	2
Harvesting,	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	0	2	3
						1	0	9½
Rent, &c.	-	-	-	-	-	0	8	6
						1	9	3½
PRODUCE.						£.	s.	d.
1 qr. 1 bushel, at 40s.	-	-	-	-	-	2	5	0
Expences,	-	-	-	-	-	1	9	3½
Profit, 2l. 3s. 2d. per acre,	-	-	-	-	-	0	15	9½

Ploughing,

	£.	s.	d.
Ploughing,	0	2	7½
Manuring,	0	10	2½
Carting in harvest,	0	0	0½

Clear profit, 11s. 7d. per acre,	0	12	10½
	0	2	10½

Account of the drilled rood.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	1	9
One harrowing,	0	0	1
Manuring,	0	12	0
Drilling,	0	0	0½
Seed,	0	1	8
Four horse-hoeing,	0	0	8
Three hand-hoeings,	0	1	9
Reaping,	0	0	9
Harvesting,	0	0	6
Threshing,	0	1	10
Rent, &c.	1	1	0½
	0	8	6
	1	9	6½

PRODUCE.

	£.	s.	d.
7 bushels and a peck, at 40s.	1	16	3
Expences,	1	9	6½
Profit, 1l. 6s. 9d. per acre,	0	6	8½

	£.	s.	d.
Ploughing,	0	2	7½
Manuring,	0	10	2½
Harrowing,	0	0	0½
Drilling,	0	0	0½
Horse-hoeing,	0	0	5
Carting in harvest,	0	0	0½
The above profit,	0	13	5½
	0	6	8½
Loss, 1l. 11s. per acre,	0	7	9

COMPARISON.

	£.	s.	d.
Profit by the broad cast,	8	11	7
Loss by the drilled,	1	11	0
Superiority of the former,	2	2	7

OBSERVATIONS.

The reader will please to remember that I am not here giving a full comparison between the two methods of culture, which will be the design of a succeeding part of this work, wherein the crops on the same land will be compared for several years, such a method being the only fair one of forming a *general* comparison. At present I am inquiring which method is most advantageous, single crops taken. I state a field, prepared by fallowing or otherwise, and try by experiment to discover which method answers best: the trial with wheat cannot be continued, because it is improper to sow land with that grain two years running.

My trials have not hitherto been at all decisive; they have wavered, first in favour of one method, and then of another: this experiment is much in favour of broad cast sowing; but I forbear offering reflections on it; these variations should convince one, that nothing in agriculture is to be determined for or against, without much experience from numerous trials.

EXPERIMENT N^o 7.

Culture, expences, and produce, of half an acre, in two divisions,
field M*, 1764.

CULTURE.

This piece was first ploughed in march 1763; it received but three more ploughings, the last of which threw one half of it on to five feet ridges; and the other, as in common, on to three feet ones. The second week in october, the first were arched and harrowed, and drilled with two rows one foot asunder, taking a peck and half of seed; the other half was at the same time ploughed and sowed in the common way with two pecks. The land was by no means in good order for drilling, respecting fineness, as many clods remained hard and large; but according to common ideas the broad cast half was in good order; however, both were alike, and consequently the comparison of use. The latter was thistled once, and the former horse-hoed four times, hand-hoed thrice, and hand-weeded once.

August the 28th the broad cast was reaped; but the drilled was remarkably green, and could not be cut till eight days after; by which it suffered much from rain. Product,

Of the broad cast,	-	-	-	-	-	0	5	0
Of the drilled,	-	-	-	-	-	0	2	1
Superiority of the former,	-	-	-	-	-	0	2	3

Account of the broad cast rood.

EXPENCES.

	£.	s.	d.
Five ploughings,	0	1	3
Seed,	0	2	3
Sowing,	0	0	1
Thistling,	0	0	8
Reaping,	0	1	2
Harvesting,	0	0	9
Threshing,	0	1	3
Rent, &c.	0	7	5
	0	8	6

PRODUCE.

	£.	s.	d.
5 bushels, at 40s.	1	5	0
Expences,	0	15	11 1/2
Profit, 17. 16s. 2d. per acre,	0	9	0 1/2
Ploughing,	0	1	10 1/2
Carting in harvest,	0	0	0 1/4
Clear profit, 17. 8s. 5d. per acre,	0	7	1 1/4

Account of the drilled rood.

EXPENCES.

	£.	s.	d.
Five ploughings,	0	1	3
One harrowing,	0	0	1
Seed,	0	1	8
Drilling,	0	0	0 1/4
Four horse-hoeings,	0	0	8
Three hand-hoeings,	0	1	6
One hand-weeding,	0	1	2
Reaping,	0	0	8
Carried over,	0	7	0 1/4

OBSERVATIONS on this COMPARISON, during the year 1764.

These experiments are not at all decisive in proving at large, which is the best method; but they deserve some attention nevertheless, because each experiment is in itself absolutely decisive; and each year, though the conclusions to be drawn from it be extended no farther. The general account of these trials is as follows:

	Drilled.			Broad-cast.		
	Loss.	Profit.		Loss.	Profit.	
	£. s. d.	£. s. d.		£. s. d.	£. s. d.	
Experiment N ^o 1,	0 12 6			0 5 9½		
2,	0 9 9			0 3 1		
3,	2 8 5			0 2 4		
4,	0 8 6½			0 6 1		
5,		5 3 2		3 10 0		
6,	1 11 0			0 11 7		
7,	1 11 3			1 8 5		
	7 1 5½	5 3 2		0 11 2½	5 16 10	
	5 3 2			0 11 2½		
	1 18 3½			5 5 7½		
Profit by the broad cast,	-	-	-	5 5 7½		
Loss by the drilled,	-	-	-	1 18 3½		
Broad cast better by	-	-	-	7 3 11½		

This superiority is immense, and if nothing farther was taken into the account, would clearly decide against the drilled method. But in other years, the success may be different; for which reason, we must not be decisive in our reflections. Indeed the advocates for drilling will say, that the charge of a year's fallow on every crop is not according to the nature of the new husbandry, which is founded on successive ones: but it is precisely the same with the old: for although that admits not of the same crop every year, yet it admits some crop or other every year, and such as are equally profitable with wheat. I apprehend, from the observations I have been able to make in the short period of two years, in which I have practised husbandry, that to sow wheat every other year with a fallow intervening is a very profitable method. I shall not fail, however, prosecuting this trial regularly every year, which will throw more light on the question; while the general comparison which

which I am carrying on between the two methods, in the culture of various as well as particular plants, will decide the matter at last clearly.

EXPERIMENT N^o 8.

Culture, expences, and produce, of half an acre, in two divisions, field L*, 1765.

CULTURE.

This piece received the first ploughing in october 1763. In march 1764 it was again stirred; in april again: the latter end of the same month harrowed it. In may it was ploughed and harrowed again. Another earth in june. Two more in july and august. The beginning of september it was divided: one half was ploughed on to five feet ridges, and the other flat. Each was then manured with four loads of coal ashes, mortar-rubbish, &c. that had been mixed twice, for discovering which method paid best for the expence. They were then ploughed and sown; the flat half on to yard ridges; and the other arched up, and drilled in double rows 1 foot asunder: the whole was left well water-furrowed.

In march the drilled half was horse-hoed, and then, as usual, water-furrowed again. In april the second horse-hoeing was given. In may the third, and an hand-hoeing, and the broad cast part thiftled. The first week in june it was horse and hand-hoed again. The first week in july both these operations were repeated; this last horse-hoeing being a deepening the interval, and throwing the earth clear to the roots of the corn. Both these crops have made a very gallant appearance through the season: and I have great hope that this drilled rood will turn out finely.

The first week in september both were reaped;

	Q.	B.	P.
The drilled half yielded,	0	4	0
The broad cast,	0	6	3
Superiority of the latter,	0	2	3

Account of the drilled rood.

EXPENCES.

	£.	s.	d.
Nine ploughings,	0	2	3
Three harrowings,	0	0	3
Two water-furrowings,	0	1	0
Manuring, cost, and labour,	0	9	9
Drilling,	0	0	1
Seed,	0	1	10
Five horse-hoeings,	0	0	10
Carried over,	0	16	0

Chapter I.

W H A T.

[10]

Brought over, - - - - -
Three hand-hoeings, - - - - -
Reaping, - - - - -
Harvesting, - - - - -
Threshing, - - - - -

Rent, &c. - - - - -

PRODUCE.

Half a quarter, at 42s. - - - - -

Expences, - - - - -

Produce, - - - - -

Loss, 1l. 16s. 8d. per acre, - - - - -

Ploughing, - - - - -

Harrowing, - - - - -

Carting manure, - - - - -

Drilling, - - - - -

Horfe-hoeing, - - - - -

Carting in harvest, - - - - -

Total loss, 2l. 14s. 11d. per acre, - - - - -

Account of the broad cast rood.

EXPENCES.

Nine ploughings, - - - - -

Two harrowings, - - - - -

Manuring, cost, and labour, - - - - -

Water-furrowing, - - - - -

Seed, - - - - -

Thistling, - - - - -

Reaping, - - - - -

Harvesting, - - - - -

Threshing, - - - - -

Rent, &c. - - - - -

PRODUCE.

6 bushels and 3 pecks, at 42s.

Expences,

Profit, 5s. 7d. per acre,

Ploughing,

Harrowing,

Carting manure,

Carting in harvest,

The above profit,

Loss, 7s. 3d. per acre,

COMPARISON.

Loss by the drilled,

Ditto by the broad cast,

Broad cast better by

OBSERVATIONS.

I had no conception that these crops would have turned out so bad; from their appearance I had formed great expectations of them; but very few single crops of wheat, I have reason to believe, ever answer the expence of manuring; the profit of which lies in bringing a farm in general into great heart, and in the production of other crops that will better answer; however, this is a point of great importance, and should not be decided upon a bare idea. In this trial the manure pays much better in the broad cast than in the drill method, which I am not at all surprized at: for I think it stands to reason, when the whole ground is covered with them, and roots searching every where in quest of food, that they must find more of it, than in a confined situation: but this matter, like all others, must be referred to more numerous trials.

EXPERIMENT N° 9.

Culture, expences, and produce, of half an acre, in two divisions,
field L*, 1765.

CULTURE.

This piece, like the preceding, received its first tillage in autumn 1763; and during the year 1764 was ploughed five times; the last of which in the beginning of september threw half of it on to 6 feet ridges; and the other half on to 3 feet ones. The middle of that month it was ploughed again, and the latter sown in the common way with two pecks of seed, and the former

mer arched up, harrowed, and drilled with 3 rows 1 foot asunder, taking a peck and half. They were then well water-furrowed.

In april the drill rood was horse-hoed for the first time, the weather being fine; and the ridges broke in so crumbly a state, that I apprehend the crop must reap much benefit from the operation: indeed, those who view the operation of horse-hoeing in seasonable weather, cannot but conclude that any crop must be vastly the better for it. It may not here be amiss to remark, that I never go nearer the rows of the corn in horse-hoeing than 5 inches, having attempted it more than once; but the plough is apt then to bury the plants, and raking the molds back again is not only an expensive operation (as two men should follow every plough), but, without necessity, an ineffectual one; besides, I do not care to give the new husbandry an appearance of more complicated operations than necessary; even at 5 inches distance, if the plough cuts a deep furrow, as it always should, it would bury many of the plants, if not prevented: my method of doing this, is by means of fixing a thin plate of iron or tin, from the front edge of the plough, to the coulter; as I remark that the moulds, which cover the plants, all flow through the space between the breast of the plough and the coulter; this I fix with screws occasionally, and find it to answer extremely well.

Three days after the horse-hoeing, the rows were hand-hoed. The middle of may, the second horse-hoeing was given: and the last week of that month it was again hand-hoed; also the broad-cast was thiftled.

The first week in june, it was horse-hoed for the third time; and the week following hand-hoed for the third and last time. The end of the same month it was again horse-hoed.

August 28th both were reaped; the product,

Of the drilled,	2. B. P.
Of the broad cast,	0 7 2
Superiority of the former,	0 5 0
	0 2 2

Account of the drilled rood.

EXPENCES.	£.	s.	d.
Seven ploughings,	0	1	9
One harrowing,	0	0	0
Seed,	0	1	11 1/2
Drilling,	0	0	1
Thrice water-furrowing,	0	1	6
Horse-hoeing,	0	0	8
Three hand-hoeings,	0	2	9
Carried over,	0	8	9

Brought over, 1 0 0
Reaping, &c. 8 0 0
Threshing, - - -

Rent, &c. - - -

PRODUCE.

78 bushels, at 42s.

Expences, - - -

Profit, 3l. 15s. per acre.

Ploughing,

Harrowing,

Drilling,

Horfe hoeing,

Carting,

Clear profit, 3l. 3s. 2d. per acre.

Account of the broad cast rood.

EXPENCES.

Seven ploughings, - - -
Seed, - - -
Sowing, - - -
Twice water-furrowing, - - -
Thistling, - - -
Reaping, - - -
Harvesting, - - -
Threshing, - - -

Rent, &c. - - -

PRODUCE.

5 bushels, at 40s.

Expences, - - -

Profit, 1l. 10s. 10d. per acre.

Book I.
Chap. I.
L. s. d.
8 6 6
1 0 1

12 8 6

1 0 7

1 0 4

1 0 7

1 0 9

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

1 0 7

Ploughing,
Carting,

£.	s.	d.
0	1	9
0	8	11
<hr/>		
0	5	10

Clear profit, 1l. 3s. 4d. per acre,

COMPARISON.

Profit by the drilled,

Ditto by the broad cast,

Superiority of the former,

£. s. d.

3 3 2

1 3 4

1 19 10

OBSERVATIONS.

This difference is very considerable; an acre of drilled amounting to more than double the profit of a broad cast one, is a decisive superiority: the fluctuations of success attending the comparative experiments I have hitherto made, surprizes me; their result is so various, that no regular chain of conclusions can be drawn from them. Sometimes one method is better, sometimes another, and the cause of superiority of either totally unknown; all these trials have been made with the utmost attention and accuracy; no accidents have befallen them to break their authority, and yet as many contradict each other as agree. In such a case, patience is the only remedy, that the trials may be increased and continued; for when a great number have been tried, the average must certainly be taken as the proof of comparative merit. I have several other experiments of this sort, that are reaped; and when they are threshed, I shall have fresh matter of contradiction.

EXPERIMENT N^o 10.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1765.

CULTURE.

Ploughed for the first time in autumn 1763; and four times more during the spring and summer of 1764: the last was in the first week of September, and divided the piece in two parts, one of which was thrown into 6 feet ridges, and the other into 3 feet ones. The end of the same month both were ploughed again; the first arched up and harrowed, and drilled in three rows with $\frac{3}{4}$ of a peck of seed. The other ploughed, and sowed with a peck. The last week in march, the drilled part was hand-hoed. The middle of april it was horse-hoed. The end of the same month hand-hoed again. The middle of may horse hoed; and hand-hoed directly after. The first week in june horse-hoed it for the third time; the 18th hand-hoed it. July 10th horse-hoed it. Reaped both the 20th of august.

1756

T. GRAHAM.

Book I.

2. B. P.

The produce of the drilled piece,	-	-	-	8	4	0
The broad cast,	-	-	-	8	2	2
Superiority of the former,	-	-	-	8	2	2

101 3 0
3 4 0

Account of the drilled.
EXPENCES.

Six ploughings,	-	-	-	0	0	9
One harrowing,	-	-	-	0	0	0
Seed,	-	-	-	0	0	11
Drilling,	-	-	-	0	0	0
Horse-hoeing,	-	-	-	0	0	4
Four hand-hoeings,	-	-	-	0	1	7
Reaping and harvesting,	-	-	-	0	0	9
Threshing,	-	-	-	0	0	9
Rent, &c.	-	-	-	0	4	3

101 3 0

PRODUCE.

Three bushels, at 41s.	-	-	-	0	15	4
Expences,	-	-	-	0	9	4
Profit, 2l. 7s. 10d. per acre,	-	-	-	0	5	11

Ploughing,	-	-	-	0	0	9
Harrowing,	-	-	-	0	0	0
Drilling,	-	-	-	0	0	0
Horse-hoeing,	-	-	-	0	0	4
Carting,	-	-	-	0	1	4
Clear profit, 1l. 17s. per acre,	-	-	-	0	4	7

Account of the broad cast.

EXPENCES.

Six ploughings,	-	-	-	0	0	9
Seed,	-	-	-	0	1	4
Sowing,	-	-	-	0	0	0
Carried over,	-	-	-	0	2	1

Chapel.

T. C. R. A. H. W.

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Operation	Time	Cost	Yield	Quality
Brought over,	-	-	-	-
Thistling,	-	-	-	-
Reaping,	-	-	-	-
Harvesting,	-	-	-	-
Threshing,	-	-	-	-

Rent, &c.	3	4
Account of the drilled.	3	4

PRODUCE.

2 bushels, 2 pecks, at 41s.	-	-	-	-	-	12	6
Expences,	-	-	-	-	-	8	4
Profit, <i>N.</i> 17s. 8d. per acre,	-	-	-	-	-	4	8
						<i>£.</i>	<i>s.</i>
Ploughing,	-	-	-	-	-	0	9
Carting,	-	-	-	-	-	0	4
						<hr/>	

COMPARISON.

Profit of the drilled,	-	-	-	1	17	0
<u>Ditto of the broad cast,</u>	-	-	-	1	11	2
Superiority of the former,	-	-	-	0	5	10

OBSERVATIONS.

This superiority, though not extremely brilliant, yet is not to be despised: and must be carried to the credit of the drilling method. Both crops were very good; and are a proof of what I have often heard remarked in this country, that no season can be too dry for wheat: this summer was almost a perpetual drought; and, from the dry nature of the soil of this field, one would have imagined that the crops on it must have suffered much: but no such matter appears. If I may be allowed a conjecture on the success of the drill method this year, I should attribute its superiority to the drought; the horse and hand-hoeings must infallibly feed the corn surprizingly when in want of rain; for, by exposing so often a new surface to the air, well pulverized, a vastly superior quantity of dew must be imbibed: and this is not reasoning alone, but fact; for it was very observable throughout the season, that this and my other horse-hoed crops carried a much better countenance than those in the common husbandry; and even acquired a fresh luxuriance from almost every operation.

EXPERIMENT N^o 11.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1765.

CULTURE.

From october 1763 to the end of august 1764 this piece was ploughed five times. September the 10th it was stirred again, one half thrown on to 6 feet ridges, and the other on to common 3 feet ones. October 6th ploughed them again, arching up the first; then harrowed it, and drilled 3 rows of wheat on the top of each ridge; the quantity of seed 3 qrs. of a peck; the other half ploughed and sown with a peck. March 18th hand-hoed the rows. April 11th horse-hoed them.

April the 16th hand-hoed them the second time. The 29th horse-hoed them the second time. May the 4th hand-hoed them the third time. The 15th horse-hoed them the third time. The 18th hand-hoed them the fourth time. June 8th the fourth horse-hoeing; and thiftled the broad cast piece. The horse-hoed half carried much the best appearance during these operations. August 21st, both were reaped.

							2. B. P.
The drill produced,	-	-	-	-	-	-	0 3 2
The broad cast,	-	-	-	-	-	-	0 3 0
Former superior by	-	-	-	-	-	-	0 0 2

Account of the drilled.

EXPENCES.

							f. s. d.
Seven ploughings,	-	-	-	-	-	-	0 0 10 1/2
One harrowing,	-	-	-	-	-	-	0 0 0 1/4
Seed,	-	-	-	-	-	-	0 0 11
Drilling,	-	-	-	-	-	-	0 0 0 1/2
Four horse-hoeings,	-	-	-	-	-	-	0 0 3
Four hand-hoeings,	-	-	-	-	-	-	0 1 6
Reaping,	-	-	-	-	-	-	0 0 6
Harvesting,	-	-	-	-	-	-	0 0 1 1/2
Threshing,	-	-	-	-	-	-	0 0 10 1/2
Rent, &c.	-	-	-	-	-	-	0 5 1 1/4
	-	-	-	-	-	-	0 4 3
	-	-	-	-	-	-	0 9 4 1/4

PRODUCE.

W H E A T.
PRODUCE.

3 bushels and 2 pecks, at 42s.
Expences, -

Profit, 3*l.* 12*s.* *per* acre,

Ploughing,

Harrowing.

Drilling, etc.

Horfe-hoei

Carting, 299

Clear profit, 3*l.* 0*s.* 10*d.* per acre,

Account of the broad cast.

EXPENCES.

Seven ploughings,

Seed,

Sowing,

Thiftling,

Reaping.

Harvesting,

Threshing,

Rent, &c.

PRODUCE.

3 bushels, at 42s.

Expences,

Ploughing,

Carting,

Clear profit, 2*l.* 13*s.* 8*d.* per acre,

Com-

COMPARISON.

	£.	s.	d.
Profit by drilled,	3	0	10
Broad cast,	2	13	8
Superiority of the drilled,	0	7	2

OBSERVATIONS.

The drilled crops, as fast as I thresh them, manifest a superiority, which makes me wonder at that method having ever failed; but no culture can be expected to be uniformly successful in every season: this year proving so dry, is, I apprehend, the reason of the new husbandry yielding crops so much more beneficial than the old.

It would be endless, after every experiment, to add a reflection on the different state the land is left in by these methods. The broad cast is, though not in bad order, yet not in sufficient heart for a new crop of wheat, without a fallow intervening; it must be cropped with some other vegetable. Whereas the drilled part is fit for any thing, perfectly clean, garden fine, and in great heart: this is a superiority it always possesses over the common method, which beyond a doubt exhausts the soil much more.

EXPERIMENT N^o 12.

Culture, expences, and produce, of a rood, in two divisions, field M*, 1765.

CULTURE.

The culture of this piece differed in no particular from that of the last, except the circumstance of being manured equally with farm-yard dung that had been turned over three times. Five cart loads of this were spread over the rood, before the last ploughing.

	Q.	B.	P.
The produce of the drilled part was,	0	3	0
The broad cast,	0	2	1
Superiority of the former,	0	0	3

Account of the drilled.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	0	10½
One harrowing,	0	0	0¼
Labour, manuring,	0	1	6
Seed,	0	0	11
Drilling,	0	0	0½
Carried over,	0	3	4¼

Chap. 11

W H E A T.

[101]

	£.	s.	d.
Brought over,	0	3	4
Four horse-hoeings,	0	0	3
Four hand-hoeings,	0	1	9
Reaping,	0	0	6
Harvesting,	0	0	1
Threshing,	0	0	9

Rent, &c.	0	4	3
	0	10	11

PRODUCE.

	£.	s.	d.
Three bushels, at 42s.	0	15	9
Expences,	0	10	11
Profit, 1/18s. 2d. per acre,	0	4	9

	£.	s.	d.
Ploughing,	0	0	10 1/2
Manuring,	0	0	9 1/4
Harrowing,	0	0	0 1/4
Drilling,	0	0	0 1/4
Horse-hoeing,	0	0	4 3/4
Carting,	0	0	0 3/4

Clear profit, 1/18s. per acre,	0	2	7 1/2
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Account of the broad cast.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	0	10 1/2
Seed,	0	1	4
Labour and manuring,	0	1	6
Sowing,	0	0	0 1/4
Thistling,	0	0	2
Reaping,	0	0	6
Harvesting,	0	0	2
Threshing,	0	0	6 1/2
Rent, &c.	0	5	2
	0	4	3
	0	9	5

PRO-

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GRAIN

Book 1

PRODUCE.				£.	s.	d.
2 bushels, 1 peck, at 42s.	-	-	-	9	11	04
Expences,	-	-	-	9	11	04
Profit, 19s. 2d. per acre,	-	-	-	0	0	44
Ploughing,	-	-	-	0	0	10 1/2
Manuring,	-	-	-	0	0	9 1/2
Carting in harvest,	-	-	-	0	0	0 1/2
Clear profit, 5s. 6d. per acre,	-	-	-	5	6	00
COMPARISON.				£.	s.	d.
Profit by the drilled,	-	-	-	1	1	00
Ditto by the broad cast,	-	-	-	0	5	00
Superiority of the former,	-	-	-	0	8	00

OBSERVATIONS.

In this instance, among very few, the drilled wheat receives more benefit from the manure than the broad cast: and this variation I attribute, as before, to the dryness of the season. The profit of the drilled is here considerable; but the broad cast is a bad crop. This regular success by drilling this dry year proves, I think, that method to be the most advantageous in such seasons.

EXPERIMENT N^o 13.

Culture, expences, and produce, of a rood, in two divisions, field M*, 1765.

CULTURE.

Half this rood yielded clover in the year 1764, which was mowed twice for hay. The other half was summer-fallowed, the first tillage of which was given in october 1763: from thence to the end of august five more ploughings were given, the last of which threw it on to six feet ridges. October the 20th they were stirred again, being arched up; and treble rows drilled at 1 foot asunder, with 1/4 of a peck. The other half was ploughed the same day, sown with a peck of wheat, and then harrowed it four times over.

The drilled part was hand-hoed the last week in march; and horse-hoed the first in april; the middle of the same month, it was horse-hoed again, and hand-hoed the second time the end of the same month. May 11th horse-hoed it the third time. The 28th hand-hoed it the third time. June 24th horse-hoed it for the fourth and last time. August the 22d reaped them both.

The

The broad cast yielded, - - -
The drilled, - - -

Superiority of the former, - - -

Account of the drilled.

EXPENCES.

Seven ploughings, - - -
One harrowing, - - -
Seed, - - -
Drilling, - - -
Four horse-hoeings, - - -
Three hand-hoeings, - - -
Reaping, - - -
Harvesting, - - -
Threshing, - - -

Rent, &c. - - -

PRODUCE.

Two bushels and 3 pecks, at 42s. - - -

Expences, - - -

Profit, 3l. 17s. 8d. per acre, - - -

Ploughing, - - -
Harrowing, - - -
Drilling, - - -
Horse-hoeing, - - -
Carting in harvest, - - -

Clear profit, 3l. 6s. 8d. per acre, - - -

Account of the broad cast.

EXPENCES.

One ploughing, - - -
Four harrowings, - - -
Seed, - - -

Carried over, - - -

B. P.
0 4 0
0 2 3
0 1 1

Ploughing,
Manning,
Carting in harvest

£. s. d.

0 0 10 1/2
0 0 0 1/2
0 0 11
0 0 0 1/2
0 0 0 1/2
0 0 0 1/2
0 0 0 1/2
0 0 0 1/2
0 0 0 1/2

0 4 0

0 4 3

0 8 8

£. s. d.

0 18 4 1/2

0 8 8

0 9 8 1/2

£. s. d.

0 0 10 1/2

0 0 0 1/2

0 0 0 1/2

0 0 4 1/2

0 0 0 1/2

0 1 4 1/2

0 8 4

£. s. d.

0 0 1 1/2

0 0 1

0 1 4

0 1 6 1/2

Brought over, 0 0 0
Sowing, 0 0 0
Reaping, 0 0 0
Harvesting, 0 0 0
Threshing, 0 0 0

Rent, &c. 0 2 1½

PRODUCE.
4 bushels, at 42s. 0 5 5½
Expences, 0 15 6½

Profit, 6l. 4s. 4d. per acre, 0 15 6½

Ploughing, 0 0 1½
Harrowing, 0 0 1
Carting in harvest, 0 0 0

Clear profit, 6l. 2s. 2d. per acre, 0 15 3¼

COMPARISON.
Profit by the broad cast, 6 2 2
Ditto by the drilled, 3 6 8
The former superior by 2 15 6

OBSERVATIONS.

Clover-land wheat has been always reckoned in this country the most profitable method of sowing that grain, and I believe with reason. These points are comparatively very low, and the produce as high as with a summer fallow. This crop is particularly beneficial, and far superior to the drilled one, though succeeding a fallow, in produce, as well as profit: not that the latter is inconsiderable; for 3l. 6s. 8d. is by no means a trifle.

EXPERIMENT N° 14.

Culture, expences, and produce, of a rood, in two divisions, field M*, 1765.

CULTURE.

One of the pieces yielded a crop of drilled wheat in 1764, and the other a crop of broad cast beans. The end of september of that year, the stubble

of the wheat was chopt, raked together, and carted away; and after two ploughings drilled again, the beds 6 feet wide with 3 rows, at 1 foot distant on each. The other half, the bean stubble, at the same time ploughed and sowed in the common way. The beginning of april the rows were hand-hoed. And the end of that month the first horse-hoeing was given. In may it was again hand-hoed, and also horse-hoed. In june horse-hoed twice, and the broad cast part thiftled. August the 20th both reaped.

The produce of the drilled,
The broad cast,
Superiority of the drilled,

Q. B. P.

0 2 2
0 2 0

Account of the drilled.

EXPENCES.

Cutting the old stubble, raking together, &c.
Two ploughings,
One harrowing,
Seed,
Drilling,
Four horse-hoeings,
Two hand-hoeings,
Reaping,
Harvesting,
Threshing,

£. s. d.

0 0 9
0 0 3
0 0 0
0 0 11
0 0 0
0 0 3
0 0 8
0 0 6
0 0 3
0 0 7½

Rent, &c.

0 4 3¼
0 2 1½

PRODUCE.

2 bushels, 2 pecks, at 42s.
Expences,

£. s. d.

0 13 1½
0 6 4¼

Profit, 2l. 13s. 10d. per acre,

0 6 8¼

Ploughing,
Harrowing,
Drilling,
Carried over,

£. s. d.

0 0 3
0 0 0¼
0 0 0¼
0 0 3½

Brought over,
Horse-hoeing,
Carting,

Clear profit, 2l. 7s. 10d. per acre.

Account of the broad cast.

EXPENCES.

One ploughing,
Seed,
Sowing,
Thistling,
Reaping,
Harvesting,
Threshing,

Rent, &c.

PRODUCE.

2 bushels, at 42s.
Expences,

Profit, 2l. 3s. per acre,

Ploughing,
Carting,

Clear profit, 2l. 1s. 6d. per acre,

COMPARISON.

Profit by the drilled,

Ditto by the broad cast,

Superiority of the former,

OBSERVATIONS.

It appears from this trial, that a drilled crop is a better preparation for a following one, than beans broad cast is for wheat broad cast; but the superiority is not considerable. These are both good crops; but the reader should

remark here, as in all other such comparative trials, that the soil is left after the new method in a vastly better state than after the old one.

OBSERVATIONS on this COMPARISON during the year 1765.

The experiments of this year have been very different from those of the last. In the year 1764 the broad cast method had upon the whole a vast superiority; but, on the contrary, the drilled has this year been almost uniformly the better. This contradiction between the two years shews us how cautiously we should judge of modes of husbandry from experiments, ever so numerous, if they have not been repeated through many seasons. Any person, to judge of drilling from the event of last year, would inevitably have condemned it at once; and the same person upon the view only of this year would be equally ready to condemn the old method. But let us state this matter.

	Drilled.			Broad cast.		
	PROFIT.	LOSS.		PROFIT.	LOSS.	
	£.	s.	d.	£.	s.	d.
Experiment N° 8,						
			2 14 11			0 7 3
9,	3	3	2	1	3	4
10,	1	17	0	1	11	2
11,	3	0	10	2	13	8
12,	1	1	0	0	5	6
13,	6	2	2	3	6	8
14,	2	7	10	2	1	6
	17	12	0	11	1	10
	2	14	11	0	7	3
	14	17	1	10	14	7
Profit by the drilled,						
Ditto by the broad cast,						
Drilled better by						

This superiority, on what we may call the culture of 7 acres, is very considerable: the comparison is carried through many circumstances varying from last year's trials, but in which both methods started fairly. All the drilled crops are good ones, and some of them particularly so; many (but not all) of the broad cast the same; and at the end of the year the former gains a superiority of above four pounds. Nor is this all; for here, the difference

ferent state of the land after these crops must not be forgot; the drilled ones leave the soil in so fine and good a state, that it wants nothing but two ploughings to prepare it for wheat or any other crop. Whereas the broad cast fields are by no means in so good a condition; not however (as some writers tell us of their common crops) so full of weeds, and out of heart, that a fallow is necessary: they will not admit being sown with wheat; a common farmer would think them in good order for barley or oats, or pease or beans; but turneps are the proper crop after wheat on these soils. All that this comparison of the state of the soil means, is this; if a whole field, half of which has been drilled, and half sown broad cast, be all sown in one way with any one crop, that part that was drilled would yield the best; but it must not be asserted, that the broad cast should necessarily be thrown by for a fallow, which is quite contrary to the improved practice of even common farmers.

The great superiority of the drill method I attribute, as I have already remarked, to the drought, which was very severe through most of the summer: it stands to my reason, that the loose well-pulverized intervals of the horse-hoeing method must have the advantage, when much in want of rain, over the hard untouched surface of the common one, which, I apprehend, can imbibe very little dew.

But yet we must not, on the credit of these two years, pretend to condemn (upon the whole) or praise either method, at the expence of the other. Such a decision can only be the result of the trials of several years, that most variations of season may come into the account.

EXPERIMENT N° 15.

Culture, expences, and produce, of half an acre, in two divisions,
field L*, 1766.

CULTURE.

The first tillage of this piece was given in autumn 1764. In march 1765 it was ploughed again. From thence to the end of august it received four ploughings more, and two harrowings, the last threw it into two divisions, one half on to 6 feet ridges and the other on to common ones. September 19th ploughed it again; and sowed the common half, with two pecks of wheat: arched up the other, and drilled three rows at 1 foot on the top of each ridge, taking a peck and half of seed. The field was then well water-furrowed. March 20th gave the rows the first horse-hoeing; the 22d hand-hoed them. April 10th the second horse-hoeing was given; the 14th hand-hoed it. The 25th the third horse-hoeing. May the 3d hand-hoed it. The 17th horse-hoed it again. The 26th hand-hoed it. All this time the weeds were extremely difficult to conquer. The frequent showers brought them up very thick, as fast as they were destroyed. June the 9th horse-hoed it again for the fifth time, striking the mould yet more to the plants than

than they were left by the last. And two days after, hand-weeded the rows.

July 5th, I this day observe that the part of this experiment is mildewed; but I see nothing of it in the broad cast: this I know not how to account for.

August 28th, reaped them both.

	Q.	B.	P.
Product of the broad cast,	0	4	2
Ditto of the drilled,	0	3	2
Superiority of the former,	0	1	0

Account of the drilled.

	EXPENCES.	£.	s.	d.
Seven ploughings,		0	1	9
Three harrowings,		0	0	11
Three water-furrowings,		0	1	4
Seed,		0	2	3
Drilling,		0	0	0 $\frac{1}{4}$
Five horse-hoeings,		0	0	7 $\frac{1}{2}$
Four hand-hoeings,		0	2	6
One hand-weeding,		0	1	0
Reaping,		0	1	3
Harvesting,		0	0	3
Threshing,		0	1	6 $\frac{1}{2}$
		0	12	8 $\frac{1}{4}$
Rent, &c.		0	8	6
		1	1	2 $\frac{1}{4}$

PRODUCE.

3 bushels, 2 pecks, at 38s.	£.	s.	d.
	0	16	7 $\frac{1}{2}$
Expences,	1	1	2 $\frac{1}{4}$
Produce,	0	16	7 $\frac{1}{2}$
Loss, 18s. 3d. per acre,	0	4	6 $\frac{1}{4}$
	£.	s.	d.
Ploughing,	0	4	2 $\frac{1}{4}$
Harrowing,	0	0	3
Drilling,	0	0	0 $\frac{1}{2}$
Carried over,	0	4	5 $\frac{1}{4}$

	£.	s.	d.
Brought over,	0	4	5½
Horse-hoeing,	0	1	0
Carting in harvest,	0	0	1½
	<hr/>		
	0	5	7½
Total loss, 2l. or. 8d. per acre,	0	10	2

Account of the broad cast.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	1	9
Two harrowings,	0	0	1
Two water-furrowings,	0	0	10
Seed,	0	3	0
Sowing,	0	0	1½
Thistling,	0	0	6
Reaping,	0	1	4
Harvesting,	0	0	4
Threshing,	0	1	10½
	<hr/>		
	0	9	10
Rent, &c.	0	8	6
	<hr/>		
	0	18	4

PRODUCE.

	£.	s.	d.
4½ bushels, at 40s.	1	2	6
Expences,	0	18	4
	<hr/>		
Profit, 16s. 8d. per acre,	0	4	2
	<hr/>		
Ploughing,	0	4	2½
Harrowing,	0	0	2
Carting in harvest,	0	0	1½
	<hr/>		
	0	4	6

The above profit,	0	4	2
	<hr/>		
Loss, 1s. 4d. per acre,	0	0	4

COMPARISON.

	£.	s.	d.
Loss by the drilled,	2	0	8
Ditto by the broad cast,	0	1	4
	<hr/>		
Latter superior by	1	19	4

OBSER-

OBSERVATIONS.

This season has been the very contrast of the last, as wet as the other was dry: inasmuch that the crops upon all the wet or moist lands in this neighbourhood are, I hear, extremely poor: and the perpetual showers in the spring so drenched the fields, that no care could keep them perfectly clean from weeds: I had some horse-hoed crops this year that were perpetually hoeing and weeding; and nothing less was sufficient to eradicate them. But the drilled corn suffered extremely; much of it was beat down as well as the broad cast: a great deal of this crop among others was mildewed; and the produce is found to be proportioned to such evils. In the last year's register I hinted an idea, that the pulverization of the moulds kept it in a proper state for imbibing the dews; may not the same cause operate in affording too easy an entrance to rain, when showers are much more frequent than wanted? I know not how philosophical such a notion may be; but certainly the comparison of this experiment seems to favour it.

EXPERIMENT N^o 16.

Culture, expences, and produce, of half an acre, in two divisions,
field L*, 1766.

CULTURE.

This piece was first ploughed in october 1764: summer-fallowed through the year 1765, receiving, by the first week in september, six ploughings: the last of which threw one half on to 6 feet ridges, and the other half on to common 3 feet ones. The 24th of that month stirred it again, and sowed the common ridges with 2 pecks of seed. Arched up the others, and drilled them in 3 rows, 1 foot asunder, with a peck and half of seed: the whole was then well water-furrowed. April 18th horse-hoed it. The 22d hand-hoed it. May the 6th horse-hoed it again. The 9th hand-hoed it. The 17th horse-hoed it again. The 29th hand-hoed it. June 21st horse-hoed it the 4th and last time. The 27th hand-weeded it. The 28th of august reaped both, equally mildewed.

Q. B. P.

The produce of the broad cast,	-	-	-	-	0	4	0
Ditto of the drilled,	-	-	-	-	0	3	0
Superiority of the former,	-	-	-	-	0	1	0

Account of the drilled.

EXPENCES.

					£.	s.	d.
Seven ploughings,	-	-	-	-	0	1	9
One harrowing,	-	-	-	-	0	0	0½
Carried over,	-	-	-	-	0	1	9½

1721

G R A I H N W

Book I.

	£.	s.	d.
Brought over,	0	1	9½
Three water-furrowings,	0	1	5
Seed, 1 0 - - -	0	2	3
Drilling,	0	0	0¾
Four horse-hoeings,	0	0	6
Three hand-hoeings,	0	2	0
One hand-weeding,	0	1	0
Reaping,	0	1	3
Harvesting,	0	0	4
Threshing,	0	1	6
	0	12	1¼
Rent, &c.	0	8	6

PRODUCE.

	£.	s.	d.
3 bushels, at 39s.	0	14	7½
Expences,	1	0	7¼
Produce,	0	14	7½

Loss, 1l. 3s. 11d. per acre,

	£.	s.	d.
Ploughing,	0	4	2½
Harrowing,	0	0	1
Drilling,	0	0	0½
Horse-hoeing,	0	0	9¾
Carting in harvest,	0	0	1½

Total loss, 2l. 4s. 11d. per acre,

Account of the broad cast rood.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	1	9
Water-furrowings,	0	1	2
Seed,	0	3	0
Sowing,	0	0	1½
Thistling,	0	0	6
Reaping,	0	1	2
Carried over,	0	7	8½

	£.	s.	d.
Brought over,	0	7	8½
Harvesting,	0	0	4
Threshing,	0	1	8
	0	9	8½
Rent, &c.	0	8	6

PRODUCE.			
	£.	s.	d.
4 bushels, at 39s.	0	19	6
Expences,	0	18	2½
Profit, 5s. 2d. per acre,	0	1	3½

	£.	s.	d.
Ploughing,	0	4	2½
Carting in harvest,	0	0	1½
The above profit,	0	1	3½
Loss, 12s. 1d. per acre,	0	3	0½

COMPARISON.			
	£.	s.	d.
Loss by the drilled,	2	4	11
Ditto by the broad cast,	0	12	1
Superiority of the former,	1	12	10

OBSERVATIONS.

This trial is a fresh proof, that drilling in such a season as this is not the best practice; at least, I know not to what cause besides the season to attribute such a falling off from the success of the last year. The loss on this drilled crop is very great; and although the broad cast one is not profitable, but the contrary, yet the difference is very great. One circumstance I should mention, which I had not much observed before; and that is, it was much damaged by crows and rooks alighting on it; they broke the corn into the intervals very much in some spots, while they neglected alighting on the broad cast, which did not afford them such an opportunity of a clear space to eat them in: something of this evil I recollect seeing before, but not in a degree which made me minute it.

The expences of the drilling method may be thought by the sanguine admirers of that mode of culture to be charged high; but I am, on the contrary, certain that they are in no instance over-rated. Less money may certainly

certainly be expended on it; but not if the weeds are absolutely eradicated, and the soil kept in perfect pulverization.

EXPERIMENT N° 17.

Culture, expences, and produce, of half an acre, in two divisions,

field L*, 1766.

CULTURE.

Half this piece was sown with beans, broad cast, in the year 1765; and the other half yielded a crop of drilled wheat. September the 19th the latter was ploughed down, and the week following arched up the ridges (they were 6 feet broad), and drilled each with 3 rows of wheat; taking in all a peck and half of seed. The same day ploughed and sowed the bean land in the common manner, with two pecks of seed; and then water-furrowed the whole. March 21st hand-hoed the rows. April 8th horse-hoed them. The 21st horse-hoed them a second time. The 28th I had begun hand-hoeing, but excessive rains stopped it till the 1st of May. The 9th of that month horse-hoed it for the third time. The 8th hand-hoed. The 24th horse-hoed it again. June 11th hand-hoed it, and the 27th hand-weeded it; the broad cast was hand-weeded at the same time. August 29th reaped them.

The produce of the broad cast,

Of the drilled,

Broad cast better by

Account of the drilled.

EXPENCES.

Cutting and raking the old stubble,

Two ploughings,

One harrowing,

Three water-furrowings,

Seed,

Drilling,

Four horse-hoeings,

Four hand-hoeings,

One hand-weeding,

Reaping,

Harvesting,

Threshing,

Rent, &c.

Q. B. P.

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Thiefing.

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PRODUCE.		
2 bushels, at 40s.	-	0 10 0
Expences,	-	0 16 0
Produce,	-	0 10 0
Loss, 1l. 4s. 1d. per acre,	-	0 6 0
<hr/>		
Ploughing,	£. s. d.	0 1 2 1/2
Harrowing,	0 0 0	0 0 0
Drilling,	0 0 0	0 0 0
Horse-hoeing,	0 0 0	0 0 0
Carting,	0 0 0	0 0 0
<hr/>		
Total loss, 1l. 13s. 1d. per acre,	-	0 8 3 1/2

Account of the broad cast.

EXPENCES.		
One ploughing,	-	0 0 3
Seed,	-	0 3 0
Sowing,	-	0 0 0
Two water-furrowings,	-	0 1 0
Thistling,	-	0 0 6
Reaping,	-	0 1 3
Harvesting,	-	0 0 3
Threshing,	-	0 1 3
<hr/>		
Rent, &c.	-	0 7 7 1/2
<hr/>		
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PRODUCE.		
3 bushels, at 40s.	-	0 15 0
Expences,	-	0 11 10 1/2
Profit, 12s. 6d. per acre,	-	0 3 1 1/2
<hr/>		
Ploughing,	£. s. d.	0 0 7
Carting in harvest,	0 0 0	0 0 1 1/2
<hr/>		
Clear profit, 9s. 8d. per acre,	-	0 2 5

COMPARISON.

	£.	s.	d.
Profit by the broad cast,	0	9	8
Loss by the drilled,	1	13	1
Broad cast better by	2	2	9

OBSERVATIONS.

It appears from this trial, that broad cast beans are a better preparation for broad cast wheat, than drilled wheat is for a successive crop of the same, in such a season as this: and it further appears from this experiment, that a second crop of drilled wheat on the same land, without the intervention of a fallow, fared no better in this unfavourable season, than that which succeeded a fallow, the loss upon this being very considerable. The bean wheat is nothing of a crop; but it is vastly superior to the drilled.

EXPERIMENT N° 18.

Culture, expences, and produce, of a rood, in two divisions, field L*, 1766.

CULTURE.

Half this piece yielded a crop of clover in the year 1765, which was mown twice for hay. The other half was a drilled crop of wheat. The end of september the latter was ploughed, the old ridges being thrown down (after the stubble was cut, &c.); and in a few days after the new ones (5 feet) were arched up, and drilled with 2 rows of wheat on each, with half a peck of wheat; and at the same time the clover land was ploughed up, and a peck of seed harrowed in. The whole was then well water-furrowed.

April 9th hand-hoed the rows. The 14th horse-hoed them. The 25th a second time. May 2d hand-hoed them again. The 14th horse-hoed them a third time. The 23d hand-hoed them a third time. June 7th horse-hoed them the fourth time, and thiftled the broad cast. The 27th hand-weeded. September the 1st reaped them: the drilled was much mildewed; the broad cast a little, and more beaten down than the other.

	Q.	B.	P.
Produce of broad cast,	0	1	2
Of the drilled,	0	1	1
Broad cast better by	0	0	1

Account of the drilled.

EXPENCES.

	£.	s.	d.
Cutting and raking the old stubble, &c.	0	0	7
Two ploughings,	0	0	3
One harrowing,	0	0	0½
Carried over,	0	0	10½

	£.	s.	d.
Brought over,	0	0	10½
Two water-furrowings,	0	0	4
Seed,	0	0	9
Drilling,	0	0	0½
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	9
One weeding,	0	0	6
Reaping,	0	0	6
Harvesting,	0	0	3
Threshing,	0	0	7½
Rent, &c.	0	4	10½
	0	2	1½
	0	6	11½

PRODUCE.

1 bushel and 1 peck, at 38s.	0	5	11½
Expences,	0	6	11½
Produce,	0	5	11½
Loss, 8s. 4d. per acre,	0	1	0½
Ploughing,	0	0	7½
Harrowing,	0	0	0½
Drilling,	0	0	¼
Horse-hoeing,	0	0	4¾
Carting in harvest,	0	0	0¾
Total loss, 17s. 2d. per acre,	0	2	1¾

Account of the broad cast.

EXPENCES.

	£.	s.	d.
One ploughing,	0	0	1½
Four harrowings,	0	0	1
Seed,	0	1	6
Sowing,	0	0	0¾
Water-furrowing,	0	0	4
Thistling,	0	0	3
Carried over,	0	2	4½

1781

T G R A I N.

Book, I.

	£.	s.	d.
Brought over,	0	2	4 $\frac{1}{4}$
Reaping,	0	0	6
Harvesting,	0	0	2
Threshing,	0	0	9
	0	3	9 $\frac{1}{4}$
Rent, &c.	0	2	1 $\frac{1}{2}$
	0	5	10 $\frac{3}{4}$

PRODUCE.

	£.	s.	d.
1 bushel and 2 pecks, at 38s.	0	7	1 $\frac{1}{2}$
Expences,	0	5	10 $\frac{3}{4}$
Profit, 9s. 10d. per acre,	0	1	2 $\frac{1}{4}$

	£.	s.	d.
Ploughing,	0	0	3 $\frac{1}{2}$
Harrowing,	0	0	2
Carting in harvest,	0	0	0 $\frac{3}{4}$
	0	0	6 $\frac{1}{4}$
Clear profit, 5s. 8d. per acre,	0	0	8 $\frac{1}{2}$

COMPARISON.

	£.	s.	d.
Loss by the drilled,	0	17	2
Profit by the broad cast,	0	5	8
Broad cast superior by	1	2	10

OBSERVATIONS.

This trial seems to prove, that clover is a better preparation for broad cast wheat than one drilled crop is for another, at least in a very wet year. The superiority of the common method in this experiment is very great, and indeed this superior success is uniform in all my crops this year. It is but fair however to remark that 2*l.* is a very considerable profit this year, when such numbers will fall far short even of paying charges.

EXPERIMENT N^o 19.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1766.

CULTURE.

This piece received its first tillage in october 1764. In the following spring and summer, it was ploughed six times more, the last of which, dividing it, threw half of it into 6 feet ridges, and the other half on to 3 feet ones.
The

The first week in october, the first were arched up by a seventh ploughing, and harrowed and drilled in three rows, 1 foot asunder, with $\frac{1}{4}$ of a peck of seed; and the others ploughed and sowed in the common way, with a peck.

The following year the one was thiftled, and the other received four horse-hoeings, three hand-hoeings, and one hand-weeding: they were reaped the end of august; the drilled much mildewed:

	Q.	B.	P.
The produce of it,	0	1	3
Of the broad cast,	0	1	3
Equal,	0	0	0

Account of the drilled.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	0	10 $\frac{1}{2}$
One harrowing,	0	0	0 $\frac{1}{4}$
Drilling,	0	0	0 $\frac{1}{2}$
Seed,	0	1	1 $\frac{1}{2}$
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	10
One weeding,	0	0	6
Reaping,	0	0	8
Harvesting,	0	0	2
Threshing,	0	0	6 $\frac{1}{2}$
	0	5	0 $\frac{1}{4}$
Rent, &c.	0	4	3
	0	9	3 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
1 bushel and 3 pecks, at 40s.	0	8	9
Expences,	0	9	3 $\frac{1}{4}$
Produce,	0	8	9
Loss, 4s. 2d. per acre,	0	0	6 $\frac{1}{4}$

	£.	s.	d.
Ploughing,	0	2	1
Harrowing,	0	0	0 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{1}{4}$
Carried over,	0	2	1 $\frac{1}{4}$

	£.	s.	d.
Brought over,	0	2	1 $\frac{1}{4}$
Horse-hoeing,	0	0	4 $\frac{1}{4}$
Carting in harvest,	0	0	0 $\frac{1}{4}$
			<hr/>
	0	2	7 $\frac{1}{4}$
Total loss, 1 <i>l.</i> 5 <i>s.</i> 0 <i>d.</i> per acre,	0	3	1 $\frac{1}{4}$
			<hr/>

Account of the broad cast.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	0	10 $\frac{1}{2}$
Seed,	0	1	6
Sowing,	0	0	0 $\frac{1}{4}$
Thistling,	0	0	3
Reaping,	0	0	6
Harvesting,	0	0	4
Threshing,	0	0	8
			<hr/>
	0	4	2 $\frac{1}{4}$
Rent, &c.	0	4	3
			<hr/>
	0	8	5 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
1 bushel and 3 pecks, at 4 <i>s.</i>	0	8	9
Expences,	0	8	5 $\frac{1}{4}$
			<hr/>
Profit, 3 <i>s.</i> 2 <i>d.</i> per acre,	0	0	4 $\frac{3}{4}$

	£.	s.	d.
Ploughing,	0	2	1
Carting in harvest,	0	0	0 $\frac{1}{4}$
			<hr/>
The above profit,	0	2	1 $\frac{1}{4}$
	0	0	4 $\frac{1}{4}$
			<hr/>
Loss, 14 <i>s.</i> per acre,	0	1	9

COMPARISON.

	£.	s.	d.
Loss by the drilled,	1	5	0
Ditto by the broad cast,	0	14	0
			<hr/>
Broad cast better by	0	11	0

OBSER-

OBSERVATIONS.

This broad cast crop is not so good as some of the preceding ones on the heavy soil; which surprizes me, as the gravels yielded this year the best crops throughout the neighbourhood.

EXPERIMENT N° 20.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1766.

CULTURE.

Half this piece was drilled last year with wheat, and half of it yielded a crop of clover, that was mown twice for hay. The ridges of the first were six feet ones, which were ploughed down in the middle of september, and at the end of the same month arched up, harrowed, and drilled again with $\frac{3}{4}$ of a peck of seed. At the same time the clover land was ploughed, and had a peck harrowed in. The drilled (like most of the preceding crops), was horse-hoed four times, hand-hoed thrice, and weeded once. The broad cast thiftled once.

	Q.	B.	P.
The produce of the latter,	0	2	0
The drilled,	0	1	3
Superiority of the former,	0	0	1

Account of the drilled.

EXPENCES.

	£.	s.	d.
Cutting and raking the stubble, &c.	0	0	7
Two ploughings,	0	0	3
One harrowing,	0	0	0 $\frac{1}{4}$
Seed,	0	1	1 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{1}{2}$
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	9
One hand-weeding,	0	0	6
Reaping,	0	0	6
Harvesting,	0	0	3
Threshing,	0	0	7 $\frac{1}{2}$
	0	4	10 $\frac{3}{4}$
Rent, &c.	0	2	1 $\frac{1}{2}$
	0	7	0 $\frac{1}{4}$
PRODUCE.			

1821]

G R A I N.

Book I.

PRODUCE.

1 bushel and 3 pecks, at 40s.

Expences,

Profit, 13s. 10d. per acre,

£. s. d.

0 8 9

0 7 0 $\frac{1}{4}$ 0 1 8 $\frac{3}{4}$

£. s. d.

Ploughing,

Drilling,

Harrowing,

Horse-hoeing,

Carting in harvest,

0 0 7

0 0 0 $\frac{1}{4}$ 0 0 0 $\frac{1}{2}$ 0 0 4 $\frac{3}{4}$ 0 0 0 $\frac{3}{4}$ 0 1 1 $\frac{1}{4}$

Clear profit, 5s. per acre,

0 0 7 $\frac{1}{2}$

Account of the broad cast.

EXPENCES.

One ploughing,

Four-harrowings,

Seed,

Sowing,

Thistling,

Reaping,

Harvesting,

Threshing,

£. s. d.

0 0 1 $\frac{1}{2}$

0 0 1

0 1 6

0 0 0 $\frac{3}{4}$

0 0 2

0 0 6

0 0 3

0 0 11 $\frac{1}{4}$

Rent, &c.

0 3 7 $\frac{1}{2}$ 0 2 1 $\frac{1}{2}$

0 5 9

PRODUCE.

bushels, at 40s.

Expences,

Profit, 1l. 14s. per acre,

£. s. d.

0 10 0

0 5 9

0 4 3

£. s. d.

Ploughing,

Harrowing,

Carting in harvest,

0 0 3 $\frac{1}{2}$

0 0 2

0 0 0 $\frac{1}{4}$ 0 0 6 $\frac{1}{4}$

Clear profit, 1l. 9s. 10d. per acre,

0 3 8 $\frac{1}{4}$

COM-

COMPARISON.

	£.	s.	d.
Profit by the broad cast,	-	-	-
Ditto by the drilled,	0	5	0
Broad cast the better by	1	4	10

OBSERVATIONS.

The clover in this experiment is plainly a much better preparation for broad cast wheat, than one drilled crop is for another: the common husbandry here is very profitable for this year; but the drilled, notwithstanding its account is not clogged with the expence of a double fallow, yields but trifling advantage.

EXPERIMENT N° 21.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1766.

CULTURE.

This piece yielded potatoes last year: it received the first ploughing the middle of october; which threw half of it on to 6 feet ridges, and the other half on to common three feet ones; in a few days after, the whole was manured with 4 loads of yard dung; the first were arched up, harrowed, and drilled with $\frac{3}{4}$ of a peck of seed, and the others ploughed and sowed with a peck. The following spring and summer, the drilled part was horse-hoed four times, hand-hoed thrice, and weeded once. The broad cast was thinned once. They were heaped the end of august: and the produce,

	Q.	B.	P.
Of the broad cast,	0	2	0
The drilled,	0	2	0
Equal,	0	0	0

Account of the drilled.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	3
One harrowing,	0	0	0 $\frac{1}{4}$
Labour, manuring,	0	1	6
Seed,	0	1	1 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{1}{2}$
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	8
One weeding,	0	0	6
Carried over,	0	4	4 $\frac{1}{4}$

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Book I

	£.	s.	d.
Brought over,	0	4	4
Reaping,	0	0	6
Harvesting,	0	0	4
Threshing,	0	0	10

Rent, &c.	0	6	0
	0	2	1
	0	8	1

PRODUCE.

2 bushels, at 42s.	0	10	6
Expences,	0	8	1

Profit, 18s. 10d. per acre,	0	2	4
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	£.	s.	d.
Ploughing,	0	0	7
Harrowing,	0	0	1
Drilling,	0	0	1
Horfe-hoeing,	0	0	4
Carting,	0	0	0
Ditto, manure,	0	1	0
	0	2	1
Clear profit, 2s. per acre,	0	0	3

Account of the broad cast.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	3
Labour, manuring,	0	1	6
Seed,	0	1	6
Sowing,	0	0	0
Thistling,	0	0	3
Reaping,	0	0	8
Harvesting,	0	0	4
Threshing,	0	1	0

Rent, &c.	0	5	6
	0	2	1
	0	7	8

PRODUCE.

PRODUCE.					£.	s.	d.
2 bushels, at 42s.	-	-	-	-	0	10	6
Expences,	-	-	-	-	0	7	8½
Profit, 1l. 2s. 6d. per acre,	-	-	-	-	0	12	9½
					£.	s.	d.
Ploughing,	-	-	-	-	0	0	7
Manuring,	-	-	-	-	0	1	0
Carting,	-	-	-	-	0	0	0½
					<hr/>		
					0	1	7½
Clear profit, 9s. 4d. per acre,	-	-	-	-	0	1	2
COMPARISON.					£.	s.	d.
Profit by the broad cast,	-	-	-	-	0	9	4
Ditto by the drilled,	-	-	-	-	0	2	0
					<hr/>		
Broad cast better by	-	-	-	-	0	7	4
					<hr/>		

OBSERVATIONS.

The crop of potatoes had certainly been very beneficial to the soil; for, when it was ploughed up, it was extremely mellow and crumbly, a state very desirable in land for all succeeding crops: but the taking up the potatoes, which cannot be done until many of the stalks wither, delayed the sowing the wheat longer than I do in general. The broad cast method in this experiment is superior to the drill; from whence we may conclude, that the manure took more effect in that way than in the other. It is observable, that, notwithstanding most of my horse-hoed crops this year being mildewed, yet was not this touched. Manure on gravels is supposed to occasion the mildew in some measure, among common farmers; but this experiment contradicts the idea.

OBSERVATIONS ON THIS COMPARISON, during the year 1766.

The drilling method, during the course of this year, has been upon the whole extremely unsuccessful. The loss by it has been so great, that any common farmer (supposing the possibility of a common farmer's practising this culture), who had entered upon drilling this year, would condemn it as an execrable method of ruining himself, and be deterred from ever trying it again: but conclusions are not to be adopted in so compendious a manner. This year has been a very wet one; and the weeds throughout the spring, and even to the end of June, made such an appearance, that nothing but unremitting attention to their destruction could have got the better of them. The expence has been little less than enormous, and far beyond what any writer recommends, that I have read: such great expences not being attended

tended with a crop proportioned, must render any exceedingly unprofitable. But let us draw this year's comparison into one view:

Experiment N ^o	Drilled.			Broad cast.		
	Profit.	Loss.		Profit.	Loss.	
	£.	s.	d.	£.	s.	d.
15,	2	0	8	0	1	4
16,	2	4	11	0	12	1
17,	1	13	1	0	9	8
18,	0	17	2	0	5	8
19,	0	1	5	0	14	0
20,	0	5	0	1	9	10
21,	0	2	0	0	9	4
	0	7	0	2	14	6
	0	7	0	1	7	5
	7	13	10	1	7	8

Loss by the drilled, - - - - -

Profit by the broad cast, - - - - -

The broad cast, on seven acres, superior to the drilled by

This superiority is great; and it is not the result of only a single trial, but many, and those much varied: some succeeding fallows; others beans, clover, potatoes, and drilled crops, &c. and upon the whole, the event is decisive in favour of the common husbandry, in such a season, and upon such soils. What success others may meet with this year, I know not. A different soil may occasion some variation; and a superior penetration in entering into the true spirit of the new husbandry in a greater degree than I have done may certainly give advantages that had no play here. But I should, in return, remark, that the preceding crops were managed in a much more accurate manner than they would have been, had I followed the instructions I met with in many modern volumes. Either the writers of those volumes did not practise in such wet years, on soils not so apt run to weeds as mine, labour with them much cheaper; or they sunk a part of their expences, through ignorance of the real amount, or partiality for their favourite method. But, as truth alone is my business, I search for her without the least prejudice, further than that which every one must have for drilling, as it concerns the agreeableness of husbandry, not the profit: for, if I am at last fully convinced that this method is even more faulty than it appears from

this year's trials, yet I shall never be a single year without drilled corn, for the beauty of the spectacle, and the entertainment of the culture.

Had I, in these crops, been as sparing of expence as some of my predecessors, they would have been continually half weeds; for which reason, the height of my expences must never be objected against me: for I try all methods, upon the previous idea, that if they will not pay *good* husbandry, it is impossible they should pay *bad*. It has long been asserted by numerous writers, that pulverization of the soil, and eradication of weeds, are the grand pillars of the drill culture. These I execute with the most unremitting diligence, and without sparing any expence. This year was so amazingly showery, that, had I been less attentive, my drilled crops would have been like many of my neighbours common ones so thick with weeds, that the crop would not have been seen for the innumerable blossoms of the weeds.

But all my drilled crops were as clean as any garden, the molds of a sand fineness, and the whole appearance truly beautiful.

But one remark in particular I made, during the progress of this year's drilling, that much deserves minuting: the reader must doubtless observe some seeming contradictions in the cost of the several operations attending the new culture; the variations which he may so remark, were not always in consequence of real variations in the crops, but arising from the difficulty of procuring additional hands, just when wanted. The old husbandry, if managed in a spirited manner, affords pretty equal employment the year round; but this is not the case with the drilled: the horse and hand-hoeings, the weedings, &c. demand a great number of hands at very busy times of the year; the wheat crops are constantly cleaning throughout the spring seed and hay times; consequently all men, but what one can command, must be paid very high. This circumstance is not absolutely peculiar to the new husbandry; for it is the same with the old, if unusual improvements of any kind are carried on in summer. But, as the common regular business of drilling demands such a number of hands at critical seasons, it is felt much more than in the other case: this circumstance I should have made no mention of, nor charged the preceding accounts with extra prices, had it concerned only small trials; but, on the contrary, the more such experiments increase, the greater the difficulty is; nor would there be any abatement of it, if my whole farm was under the drill plough: for, in all situations that require more men in summer than are employed in winter, they can only be procured by bribing them to leave their old masters to shift for themselves: in the same manner as turnpikes, navigations, and inclosures, bribe them. And every one must know, that in the making a bargain with a set of labourers, there is a wonderful difference between the prices, when they come to ask for work, and when you persuade them to accept it.

In my practising this mode of husbandry, I have often felt, and severely too, the inconvenience of which I am speaking. Hand-hoeing of turneps

and beans is the only hoeing work commonly done in this country: the first is performed at such stated prices, that there is very seldom any *bargaining*: this is the rule by which I have often urged my men to regulate the prices of hoeing wheat, &c. but when men are fought for, they will take advantage of every circumstance; and, besides the imposition which they always practise when *new* kinds of work is put out to them, they add the rise upon account of the season. And I have often, in this manner, paid 5, 6, 7, and to 10s. an acre for work that was not fairly worth 4s. But there is no remedy: it is an expence, as much belonging to the drill culture (or with these circumstances to any other), as the drilling or horse-hoeing, or the very repairs of the drill plough.

EXPERIMENT N^o 22.

Culture, expences, and produce, of a rood, in two divisions,
field L*, 1767.

CULTURE.

This piece was ploughed for the first time in autumn 1765. And in the following spring and summer was stirred five times more: the last week in august it was thrown into two divisions, one of which on to beds 5 feet wide, and the other on to common 3 feet ridges.

The middle of september the whole was ploughed; the 5 feet ridges arched up and drilled with double rows 1 foot asunder with half a peck of wheat; the other ploughed and sown in the common way with a peck. They were then well water-furrowed.

The following spring and summer the rows were hand-hoed three times, horse-hoed four times, and hand-weeded once. Cut both the 28th of august.

					Q.	B.	P.
The produce of the drilled,	-	-	-	-	0	2	2
The broad cast,	-	-	-	-	0	2	3
The latter better by	-	-	-	-	0	0	1

Account of the drilled.

EXPENCES.

						£.	s.	d.
Seven ploughings,	-	-	-	-	-	0	1	0½
One harrowing,	-	-	-	-	-	0	0	0¼
Three water-furrowings,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	0	9
Drilling,	-	-	-	-	-	0	0	0½
Four horse-hoings,	-	-	-	-	-	0	0	3
Carried over,	-	-	-	-	-	0	2	4½

Chap. I.

W. H. A. H. T.

1789

Brought over,	£.	s.	d.
Three hand hoeings,	0	2	4 1/2
One weeding,	0	0	9
Reaping,	0	0	4
Harvesting,	0	0	8
Threshing,	0	1	3
Rent, &c.	0	5	7 1/2
	0	4	3
	0	9	10 1/4

PRODUCE.

2 1/2 bushels, at 40s.	£.	s.	d.
Expences,	0	12	6
Profit, 1l. 1s. 2d. per acre,	0	9	10 1/4
	0	2	7 3/4
Ploughing,	£.	s.	d.
Harrowing,	0	2	1 1/2
Drilling,	0	0	1 1/2
Horfe-hoeing,	0	0	1 1/4
Carting,	0	0	6
	0	0	1 1/4
The above profit,	0	2	9
Loss, 10d. per acre,	0	2	7 3/4
	0	0	1 1/4

Account of the broad cast.

EXPENCES.

Seven ploughings,	£.	s.	d.
Two water-furrowings,	0	1	0 1/2
Seed,	0	0	2
Sowing,	0	1	6
Thistling,	0	0	0 3/4
Reaping,	0	0	3
Harvesting,	0	0	9
Threshing,	0	0	3
	0	1	4 1/2
Rent, &c.	0	5	4 3/4
	0	4	3
	0	9	7 3/4

1767]

G R A H N.

Book 19

PRODUCE.

2 bushels, 3 pecks, at 40s.

Expences,

Profit, 1*l*. 12*s*. 10*d*. per acre,

Ploughing,

Carting,

Clear profit, 15*s*. 4*d*. per acre,

COMPARISON.

Profit by the broad cast,

Loss by the drilled,

Broad cast better by

OBSERVATIONS.

This year has been another extreme wet one. I entered upon the business of threshing my experiments, fully expecting wretched drilled crops; and this from the experience of last year, in which I had so much reason to suppose a wet season could not produce a good crop in that method. This trial is not so very bad as most last year; for losing only 10*d*. an acre, is being much better off than many farmers in this neighbourhood, who, I hear, have threshed some very miserable crops. The broad cast is profitable, but not in any great degree.

EXPERIMENT N^o 23.

Culture, expences, and produce, of a rood, in two divisions,
field L*, 1767.

CULTURE.

Half this piece yielded broad cast beans in the year 1766, and the other half drilled beans. The latter received two ploughings, to new form the beds, which were 6 feet ones; and being harrowed, were drilled with 3 rows of wheat 1 foot asunder, with $\frac{3}{4}$ of a peck of seed; and the other half ploughed and sowed in the common manner with a peck. The beans were so late in harvesting, that this could not be done before the second week in october. The whole was well water-furrowed.

The following spring and summer the drilled was horse-hoed four times, hand-hoed thrice, and hand-weeded once. Reaped the end of august.

The

The produce of the drilled,
Of the broad cast,

Q. B. P.

Drilled better by

Account of the drilled.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	3
One harrowing,	0	0	0
Two water-furrowings,	0	0	2
Seed,	0	1	1
Drilling,	0	0	0
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	8
One weeding,	0	0	5
Reaping,	0	0	6
Harvesting,	0	0	3
Threshing,	0	0	9

Rent, &c.

PRODUCE.

3½ bushels, at 42s.	0	18	4½
Expences,	0	7	6½
Profit, 4l. 6s. 6d. per acre,	0	10	9½

	£.	s.	d.
Ploughing,	0	0	7½
Harrowing,	0	0	0½
Drilling,	0	0	0¼
Horse-hoeing,	0	0	6
Carting,	0	0	0¾
Clear profit, 3l. 16s. 8d. per acre,	0	1	12¾

Account

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GRAIN

Book 1.

Account of the broad cast.

EXPENCES.			£.	s.	d.
One ploughing,	-	-	0	0	11
One water-furrowing,	-	-	0	0	1
Seed,	-	-	0	1	6
Sowing,	-	-	0	0	0
Thistling,	-	-	0	0	3
Reaping,	-	-	0	0	8
Harvesting,	-	-	0	0	4
Threshing,	-	-	0	1	3
Rent, &c.	-	-	0	2	11
			0	6	4
PRODUCE.			£.	s.	d.
2½ bushels, at 42s.	-	-	0	13	11
Expences,	-	-	0	6	4
Profit, 2l. 13s. 10d. per acre,	-	-	0	6	8
			£.	s.	d.
Ploughing,	-	-	0	0	3½
Carting,	-	-	0	0	0¼
			0	0	4½
Clear profit, 2l. 11s. per acre,	-	-	0	6	4½
COMPARISON.			£.	s.	d.
Profit by the drilled,	-	-	3	16	8
Ditto by the broad cast,	-	-	2	11	0
Drilled better by	-	-	1	5	8

OBSERVATIONS.

This is a fresh proof, that no general conclusions are to be drawn from the practice of one year; for I should have thought, from the event of last year's trials, that drilling wheat could not in a very wet year have proved a profitable practice: but it here beats the broad cast method, and that considerably too. How are we, even in imagination, to reconcile such contradictions? Many circumstances arise, in a minute attention to the operations of agriculture, that are perfectly unaccountable by human reason. How valuable therefore is the authority of a great number of simple facts, that may be drawn into view, and an average taken, without regard to reasoning!

EXPERIMENT N^o 24.

Culture, expences, and produce, of a rood, in two divisions,
field L*, 1765.

CULTURE.

Half this piece yielded drilled barley last year; and the other half a crop of clover that was mown twice for hay. The first received two ploughings, to reverse the ridges towards the end of september; and being harrowed, was drilled with 3 rows of wheat, 1 foot asunder, taking $\frac{1}{4}$ of a peck of seed. The other half was ploughed the same day, and a peck of wheat harrowed in: the whole well water-furrowed.

The following spring and summer the rows received four horse-hoeings, three hand-hoeings, and two hand-weedings. The broad cast was thiftled once. The first week in september both were reaped.

	Q.	B.	P.
The produce of the broad cast,	0	2	0
Ditto of the drilled,	0	1	3
Broad cast superior by	0	0	1

Account of the drilled.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	3
One harrowing,	0	0	0 $\frac{1}{4}$
Seed,	0	1	1 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{1}{2}$
Two water-furrowings,	0	0	3
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	8
Two weedings,	0	1	0
Reaping,	0	0	6
Harvesting,	0	0	4
Threshing,	0	0	10 $\frac{1}{2}$
	0	5	3 $\frac{3}{4}$
Rent, &c.	0	2	1 $\frac{1}{2}$
	0	7	5 $\frac{1}{4}$

PRODUCE.

	£.	s.	d.
1 bushel and 3 pecks, at 40s.	0	8	9
Expences,	0	7	5 $\frac{1}{4}$
Profit, 10s. 6d. per acre,	0	1	3 $\frac{3}{4}$

[C c]

Ploughing,

	£.	s.	d.
Ploughing, - - - - -	0	1	2½
Harrowing, - - - - -	0	0	1
Drilling, - - - - -	0	0	1
Horse-hoeing, - - - - -	0	0	1
Carting, - - - - -	0	0	1
Clear profit, 8d. per acre,	0	0	1

Account of the broad cast.

	£.	s.	d.
EXPENCES.			
One ploughing, - - - - -	0	0	1½
Four harrowings, - - - - -	0	0	1
Seed, - - - - -	0	1	6
Sowing, - - - - -	0	0	0
One water-furrowing, - - - - -	0	0	1½
One thistling, - - - - -	0	0	3
Reaping, - - - - -	0	0	8
Harvesting, - - - - -	0	0	3
Threshing, - - - - -	0	1	3
Rent, &c. - - - - -	0	2	1½
	0	6	5½

	£.	s.	d.
PRODUCE.			
2 bushels, at 40s. - - - - -	0	10	0
Expences, - - - - -	0	6	5½
Profit, 1l. 8s. 6d. per acre, - - - - -	0	3	6½

	£.	s.	d.
Ploughing, - - - - -	0	0	3½
Harrowing, - - - - -	0	0	2
Carting in harvest, - - - - -	0	0	4
Clear profit, 1l. 4s. 4d. per acre, - - - - -	0	3	0½

	£.	s.	d.
COMPARISON.			
Profit on the broad cast, - - - - -	1	4	4
Ditto on the drilled, - - - - -	0	0	8
Broad cast superior by - - - - -	1	3	8

OBSERVATIONS.

In this trial the drilled loses its superiority; for the broad cast is the greatest crop: and it is worthy of remark, that most of the clover land wheat, on which soever soil, proves in general the best: the new method has rarely beat this way of managing in the old, although it has so often exceeded the profit of other methods.

EXPERIMENT N^o 25.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1767.

CULTURE.

This rood was first ploughed in october 1765. In the spring and summer of 1766 it received five more earths: the last of which left it in two parts, one on 6 feet ridges, and the other on common 3 feet ones. The last week in september they were ploughed again; the former arched up, harrowed, and drilled with three rows 1 foot asunder, taking $\frac{1}{4}$ of a peck of seed, and the other sown broad cast with a peck.

In the following spring and summer the drilled part received four horse-hoeings, three hand-hoeings, and one weeding: and the broad cast a thinning. The last week in august they were reaped.

	Q.	B.	P.
The produce of the broad cast,	-	-	-
Of the drilled,	-	-	-
Superiority of the broad cast,	-	-	-

Account of the drilled.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	1	0 $\frac{1}{2}$
One harrowing,	0	0	0 $\frac{1}{2}$
Seed,	0	1	1 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{1}{2}$
Four horse-hoeings,	0	0	3
Three hand-hoeings,	0	0	9
One weeding,	0	0	4
Reaping,	0	0	8
Harvesting,	0	0	4
Threshing,	0	1	0
Rent, &c.	0	5	6 $\frac{1}{4}$
	0	4	3
	0	9	9 $\frac{1}{4}$

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GRAIN

Book 1

2 bushels, at 42s.

Expences,

Profit, 5s. 6d. per acre,

Ploughing,

Harrowing,

Drilling,

Horse-hoeing,

Carting in harvest,

The above profit,

Loss, 16s. 6d. per acre,

Account of the broad cast,

EXPENCES.

Seven ploughings,

Seed,

Sowing,

Thistling,

Reaping,

Harvesting,

Threshing,

Rent, &c.

2 bushels and 1 peck, at 42s.

Expences,

Profit, 1l. 12s. 10d. per acre,

Ploughing,

Carting in harvest,

Clear profit, 15s. 4d. per acre,

£. s. d.

0 10 6

0 9 9

0 0 8

0 0 8

0 2 1

0 0 1

0 0 1

0 0 1

0 0 1

0 0 1

0 0 1

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0 0 1

Profit by the broad cast,
Loss by the drilled,

£. s. d.
0 15 4
0 16 6

Broad cast better by

1 11 10

OBSERVATIONS.

This broad cast crop is beneficial, considering the unfavourableness of the year; but the drilled is a very poor one. And notwithstanding the horse and hand-hoeings, and weedings following a whole year's fallow, and that an uncommon one too; yet after harvest, upon walking through the stubble I saw too many weeds left; which was for want of second hand-weeding: but they sprang up too late to be of detriment to this crop; and I only mention it as one instance of the endless labour of extirpating these grand enemies of the farmer.

EXPERIMENT N° 26.

Culture, expences, and produce, of a rood, in two divisions,
field M*, 1767:

CULTURE.

This piece was ploughed, like the preceding, for the first time in autumn 1765. In the year 1766 it was stirred five times more; the last threw one half of it on to 6 feet ridges, and the other on to common 3 feet ones. Both were then manured with 4 loads of rotten farm-yard manure that had been well turned over, and ploughed again; the 6 feet ones arched up, harrowed, and drilled with 3 rows 1 foot asunder; and the others ploughed and sown in the common way: seed as before.

In the succeeding spring and summer the drilled half was horse-hoed four times, hand-hoed four times, and weeded twice. The weeds arose excessively fast (unusually so), I suppose owing to the manure: the effect was the same in the broad cast part; so that it was hand-weeded; instead of only thiffling. The last week in august both were reaped.

Produce of the broad cast,
Ditto of the drilled,

Q. B. P.
0 3 0
0 3 0

Equal,

0 0 0

Account of the drilled.

EXPENCES.

Seven ploughings,
One harrowing,

£. s. d.
0 1 0½
0 0 0¼

Carried over,

0 0 1½

	£.	s.	d.
Brought over,	0	1	0
Labour on manure,	0	2	0
Seed, 1 0 - - - - -	0	0	1
Drilling,	0	0	0
Four horse-hoeings,	0	0	3
Four hand-hoeings,	0	2	0
Two weedings,	0	0	10
Reaping,	0	0	9
Harvesting,	0	0	3
Threshing,	0	0	0
Rent, &c.	0	9	4
	0	4	3

0 13 7

PRODUCE.

	£.	s.	d.
3 bushels, at 42s.	0	15	9
Expences,	0	13	8

Profit, 16s. 6d. per acre,

	£.	s.	d.
Ploughing,	0	2	1
Harrowing,	0	0	0
Manuring,	0	0	7
Drilling,	0	0	0
Horse-hoeing,	0	0	6
Carting,	0	0	0

The above profit,

Loss, 10s. 6d. per acre,

Account of the broad cast.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	1	0
Manuring,	0	2	0
Seed,	0	1	6
Sowing,	0	0	0
Hand-weeding,	0	0	10
Reaping,	0	0	8
Carried over,	0	6	1

	£	s.	d.
Brought over,	0	6	18
Harvesting,	0	0	4
Threshing,	0	1	6
Rent, &c.	0	7	11 1/4
	0	4	3
	0	12	2 1/4

PRODUCE.

	£	s.	d.
3 bushels, at 42s.	0	15	9
Expences,	0	12	2 1/4
Profit, 1l. 8s. 6d. per acre,	0	3	6 3/4

	£	s.	d.
Ploughing,	0	2	1 1/2
Manuring,	0	0	7 1/2
Carting,	0	0	0 1/4
	0	2	9 1/4
Clear profit, 6s. 0d. per acre,	0	0	9

COMPARISON.

	£	s.	d.
Profit by the broad cast,	0	6	0
Loss by the drilled,	0	10	6
Broad cast better by	0	16	6

OBSERVATIONS.

After a thorough good fallow, I had no conception that this spot of land would have proved so unusually troublesome, from being so execrably weedy: the expence of keeping them down was very great, which, added to that of the manure, ran up the account so high, that the produce must have been vastly higher to have turned out a profitable crop. And from many experiments, I have reason to believe, that the corn in the common method of sowing draws the nourishment from the manure better than in the other method.

OBSERVATIONS ON this COMPARISON during the year 1767.

The comparative success has this year been various: but considering the wetness of the season, (if that circumstance really is against the drilled method), the new husbandry is more favourable than there was reason to expect from preceding experience. This will appear from the following table.

Drilled.				Broad cast.			
PROFIT.			LOSS.	PROFIT.			LOSS.
£.	s.	d.	£. s. d.	£.	s.	d.	£. s. d.
Experiment No 22,				0	0	10	0 15 4
23,	3	16	8	2	11	0	
24,	0	0	8	1	4	4	
25,			0 16 6	0	15	4	
26,			0 10 6	0	6	0	
<hr/>			<hr/>	<hr/>			<hr/>
3	17	4	1 7 10	5	12	0	
1	7	10					
<hr/>			<hr/>	<hr/>			<hr/>
2	9	6					

Profit by the broad cast,	-	-	-	-	£.	s.	d.
Ditto by the drilled,	-	-	-	-	5	12	0
Broad cast superior by	-	-	-	-	2	9	6
					<hr/>		
					3	2	6

Last year the loss by the drilled was considerable, whereas this year there is something of profit. But, upon the whole, the broad cast is superior. The season, it is true was very wet, which gives fresh reason to suppose that such years are not proper for drilling.

General OBSERVATIONS on the COMPARISON during these four years.

These years have been reckoned, by all the husbandmen I have conversed with, to be, two of them good, and two bad to wheat crops; and my own observation confirms the opinion. This circumstance to the general culture of wheat is an important one, as the trial of a new mode of culture receives great authority from it. Had they all been extremely favourable, or the contrary, one could have decided nothing; but a variety renders the comparisons fair.

I should remark, that I am not here comparing the old and new methods *in general*, but only *in particular*; relative to one object, the culture; and that under only certain circumstances, *viz.* the comparison of single crops in single years. The general comparison, though more important, should never be studied to the exclusion of this particular one. The profit or loss of distinct crops should in all cases be clearly known.

Suppose I have a field well fallowed, and ready for wheat: I want to be informed, which method of sowing will in one year pay me best? It is mere impertinence to talk about a succession of crops in answer to such a question, and as much in one mode of sowing as in the other; for both embrace such a succession. There are numerous situations and circumstances in which this

this knowledge is of peculiar importance, and in which the consideration of future years is totally out of the question.

Suppose I form an idea of the future management of my arable crops, relative to the stock of cattle, or other circumstances; and foresee, that in such a year I shall want 50 acres of clover. Quere; shall I lose the year after the clover by such management, on comparison with the same land being under the drill plough, which admits not clover? I do not draw a comparison between a crop of broad cast clover, and one of drilled wheat; because I suppose the former particularly requisite: but I want to know the succeeding profit or loss; whether by such clover I lose the following year.

Such cases are numerous; in which particular comparisons are of more use than general ones. And let me add, that this and many others are determined in the preceding trials. --- But let us take a general view of them.

	Old method.				New method.		
	PROFIT.				PROFIT.		
	£.	s.	d.		£.	s.	d.
1764,	5	5	7½				
1765,	13	14	7		14	17	1
1766,	1	7	8			7	13 10
1767,	5	12	0		2	9	6
	<hr/>				<hr/>		
	22	19	10½		17	6	7
					9	12	1½
					<hr/>		
					7	14	5½
					<hr/>		
Profit by the old method,	-	-	-			22	19 10½
By the new,	-	-	-			7	14 5½
						<hr/>	
The former superior by	-	-	-			15	5 5

This is very near the proportion of three to one.

It should here be in brief remarked, that this comparison extends not to the two modes *in general*: it concerns single crops alone.

I should have drawn all former crops into the comparison: but, upon reflection, I am convinced, that we ought never to compare any that were not tried with an eye to the comparison: for innumerable circumstances cause variations, that would render such parallels of very deceitful evidence. To draw all the crops in the two methods into the general averages, that are inserted in the old chapter of wheat, would perhaps satisfy some readers; but it would be very far from satisfying myself: I have often smiled at wri-

ters on the new husbandry, comparing the crops of different authors, made perhaps in different kingdoms: nothing of this sort should be done, even on the same soil, unless the experiments were absolutely *comparative*: it may be a matter of amusement or curiosity, but of no utility, no authority. The ~~broad cast crops of wheat in this work might be classed into sets that are~~ surprizingly different: many of my large fields are execrable; many small ones excellent: a comparative trial between two poor crops under the same circumstances is good; take very different ones into the account, it is good for nought: --- and *vice versa*.

The state in which the land is left does not come into the account; that alone concerns the general comparison of the two methods.

The general corollary is, that upon an average of crops of wheat in the two methods in various cases, succeeding a fallow, beans, broad cast, and drilled, clover, and drilled wheat, &c. one acre in the common husbandry is equal to three in the new.

WHEN I entered on the practice of farming, I was distressed with the defects of it, as soon afterwards: for, upon turning over some of the many volumes that had been written on the subject, I became every day more sensible what the points generally agreed upon were extremely few; but, on the other hand, the most important objects were in dispute, and quite undetermined by authors. The first emotion I felt at this diversity of opinion was that of rejecting the authority of books altogether; nor did I absolutely determine to try every thing until I had been in practice some time. It was partly upon this account that my first year is more barren of experiments than the succeeding ones: indeed, at the beginning of a practice, there are so many things to be settled and attended to, that a numerous register can scarcely be expected. My experience on the subject of this section suffered on this account; for I had considered little about the plan of my trials, that I made in the year 1763 not one experiment on the quantity of wheat seed. In the year 1764, however, I was more active.

This subject I may almost call untroubled ground: I know not of one experiment yet published. To what are we to attribute this? Can preceding writers have supposed it a matter of no consequence? This I can scarcely think. One may certainly be mistaken; but it appears to me, that hardly any enquiry can be more important; the common practice cannot be decisively right, because every country, and almost every district follows a different practice. Which therefore is the best? This question cannot be answered in the general; because various soils may require various portions of seed. Consequently the following experiments may not be of sufficient authority on different soils from those on which they were tried. For the sake of perspicuity, I arrange the experiments I have made in this point in two parts:

I. The quantity of wheat seed, when sown in the common manner.

II. The quantity when sown in the new method.

SECT.

[D 2]

PART

ters on the new husbandry, comparing the crops of different authors, made perhaps in different kingdoms: nothing of this sort should be done, even on the same soil, unless the experiments were absolutely comparative: it may be a matter of amusement or curiosity, but of no utility, no authority. The ~~bread and malt crops of wheat in this work might be classed into sets that are~~ surprisingly different: many of my large fields are excellent; many small ones excellent: a comparative trial between two poor crops under the same circumstances is good: take very different ones into the account, it is good for nothing: -- and why?

S E C T. IV.

The state in which the land is left does not come into the account: that alone concerns the general comparison of the two methods. The general conclusion is, that upon an average of crops of wheat in the two methods in various cases, succeeding a fallow, beans, broad cast, and drilled, clover, and drilled wheat, &c. one acre in the common husbandry

Of the QUANTITY of SEED.

WHEN I entered on the practice of farming, I was not so much acquainted with the defects of it, as soon afterwards: for, upon turning over some of the many volumes that had been written on the subject, I became every day more sensible, that the points generally agreed upon were extremely few; but, on the contrary, the most important objects were in suspense, and quite undetermined by authors. The first emotion I felt at this diversity of opinion was that of rejecting the authority of books altogether; nor did I absolutely determine to try every thing until I had been in practice some time. It was partly upon this account that my first year is more barren of experiments than the succeeding ones: indeed, at the beginning of a practice, there are so many things to be settled and attended to, that a numerous register at first can scarcely be expected. My experience on the subject of this section suffered on this account; for I had considered so little about the plan of my trials, that I made in the year 1763 not one experiment on the *quantity of wheat seed*. In the year 1764, however, I was more active.

This subject I may almost call untrodden ground: I know not of one experiment yet published. To what are we to attribute this? Can preceding writers have supposed it a matter of no consequence? This I can scarcely think. One may certainly be mistaken; but it appears to me, that hardly any enquiry can be more important: the common practice cannot be decisively right, because every county, and almost every district follows a different practice. Which therefore is the best? This question cannot be answered in *the general*; because various soils may require various portions of seed. Consequently the following experiments may not be of sufficient authority on different soils from those on which they were tried.

For the sake of perspicuity, I arrange the experiments I have made in this point in two parts:

- I. The quantity of wheat seed, when sown in the common manner.
- II. The quantity when sown in the new method.

It appears from this trial, that a bushel an acre is much too small a quantity of wheat: two bushels yield more than twice the quantity; a vast difference: but from two to three bushels, the rise is by no means proportionable. The greatest quantity of seed which I have seen to produce the most, is some four or five bushels; but I have not seen any more than three bushels. I have not seen any more than three bushels. I have not seen any more than three bushels.

IT is to be remarked, that the quantity of feed makes (except in a very few particular cases) no other difference in the expences of cultivation, than the purchase of it; for this reason, I shall not in the following trials state the whole detail of culture, expences, and profit, as in other cases, because the quantities sown and reaped are the only points of consequence: these papers are voluminous enough, without increasing them unnecessarily.

EXPERIMENT N° 1.

October 1763, marked three roods of land, summer-fallowed for wheat, and sowed them:

N° 1, With 1 peck of seed.

2, With 2 pecks.

3, With 3 pecks.

All preceding ploughings had been given on the same day: they were sowed, thiftled, reaped, &c. at once. The produce,

	Q.	B.	P.
N° 1.	-	-	-
2,	-	-	-
3,	-	-	-

The comparison lies in the clear produce, seed deducted: which in this experiment is as follows:

	Q.	B.	P.
N° 1, Produce,	-	-	-
Seed,	-	-	-
Clear produce,	-	-	-
N° 2, Produce,	-	-	-
Seed,	-	-	-
Clear produce,	-	-	-
N° 3, Produce,	-	-	-
Seed,	-	-	-
Clear produce,	-	-	-

OBSERVATIONS.

It appears from this trial, that a bushel an acre is much too small a quantity of wheat: two bushels yield more than twice the quantity; a vast difference: but from two to three bushels, the rise is by no means proportioned. As the highest quantity is attended with greatest produce, there remains some reason to suppose, that a yet higher quantity of seed might be proper; but future enquiries must decide that.

EXPERIMENT N° 2.

October 1763, marked five pieces of fallow land, each half a rood, and sowed them:

N° 1, With $\frac{1}{2}$ a peck.

2, With $\frac{3}{4}$ ditto.

3, With 1 ditto.

4, With $1\frac{1}{4}$ ditto.

5, With $1\frac{1}{2}$ ditto.

Culture in all circumstances the same. The produce,

N° 1,

2,

3,

4,

5,

Seed and produce, per acre, as follows:

N° 1, Produce,
Seed,

Clear produce,

N° 2, Produce,
Seed,

Clear produce,

N° 3, Produce,
Seed,

Clear produce,

N° 4, Produce,
Seed,

Clear produce,

Q. B. P.

0 0 3

0 1 0

0 2 2

0 2 3

0 3 0

Q. B. P.

0 6 0

0 1 0

0 5 0

0 1 0

0 1 2

0 7 2

0 4 0

0 2 0

2 2 0

2 6 0

0 2 2

2 3 2

B. P.

2. B. P.

N^o 5, Produce,
Seed,

1. 18
3 0

Clear produce,

1. 18
3 0

OBSERVATIONS.

The small produce from a bushel of seed *per* acre is striking; the common quantity of this country is 2 bushels: now it is surprising, that half the quantity should produce so paltry a crop; for, to one's reason it should appear, that the less the quantity of seed, the better it should be fed with such nourishment as it draws from the earth. Whatever disputes naturalists may have engaged in, concerning the food of plants; whether each sort draws a distinct food; more have supposed, that different grains of the same corn draw a different nourishment; consequently, the more seed, the more divided the food.

But the truth of the matter is, that if the land is not stocked with corn, it will be stocked with weeds; and this was the case with both the first and with this experiment.

It appears from this trial, that the greater the quantity of seed, the better the crop; but how far this extends, is yet unknown: but, from the gradual rise of the latter numbers, I conjecture that this maxim would not extend much farther.

EXPERIMENT N^o 3.

October 1763, marked 4 pieces, each half a rood, field L*, and sowed them:

- N^o 1, With $\frac{1}{2}$ a peck.
- 2, With $\frac{3}{4}$ ditto.
- 3, With 1 ditto.
- 4, With $1\frac{1}{4}$ ditto.

- N^o 1, With $\frac{1}{2}$ a peck.
- 2, With $\frac{3}{4}$ ditto.
- 3, With 1 peck.
- 4, With $1\frac{1}{4}$ ditto.

Culture and management the same. The produce,

N ^o	Produce	Seed	Clear produce
1	0 0 3 $\frac{1}{2}$	0 0 3 $\frac{1}{2}$	0 0 0
2	0 1 9	0 1 9	0 0 0
3	0 2 1	0 2 1	0 0 0
4	0 2 3	0 2 3	0 0 0
Seed and produce, <i>per</i> acre, are,			
N ^o 1, Produce,	0 7 0	0 1 0	0 6 0
Seed,	0 1 0	0 1 0	0 0 0
Clear produce,	0 6 0	0 0 0	0 6 0

N^o 3, Produce,

3, Produce,	-	-	-	-	2	2	0
Seed,	-	-	-	-	0	2	0

4. Produce,
Seed,

Clear produce,

My views in the framing of these experiments were by no means extensive enough. I had not then learnt to consider practices as the mere effect of custom and ignorance, right in many instances, but experimentally so in scarce any. Thus I had little conception that truth lay far from common practice, which gave me the idea of trying quantities not deviating greatly either way. The event of this trial confirms those of the former ones, and the similarity of the effect is remarkable. I conceive that $2\frac{1}{2}$ or 3 bushels are more proper than any less quantity.

EXPERIMENT N^o 4.

October 24th 1763, marked 5 half roods of clover land, in field P, and sowed them:

- N^o 1, With $\frac{1}{2}$ a peck.
2, With $\frac{3}{4}$ ditto.
3, With 1 peck.
4, With 1 $\frac{1}{4}$ ditto.
5, With 1 $\frac{1}{2}$ ditto.

Every article of management was the same. The produce,

[illegible]

Seed and produce, *per* acre, are,

No 1, Produce, Seed,	0	4	0
Clear produce,	0	3	0

				Q.	B.	P.
N° 2, Produce,	-	-	-	1	4	0
Seed,	-	-	-	0	1	2
Clear produce,	-	-	-	1	2	2
N° 3, Produce,	-	-	-	2	0	0
Seed,	-	-	-	0	2	0
Clear produce,	-	-	-	1	6	0
N° 4, Produce,	-	-	-	2	6	0
Seed,	-	-	-	0	2	2
Clear profit,	-	-	-	2	3	2
N° 5, Produce,	-	-	-	3	0	0
Seed,	-	-	-	0	3	0
Clear produce,	-	-	-	2	5	0

OBSERVATIONS.

This experiment appears very decisive; for the increase of produce is in every step of consequence: and, as all the former trials were made on tilth land, this is the more satisfactory, being a variation from them. Indeed it stands somewhat to reason, that on a clover lay, more wheat should be sowed than on fallows; for the clover being turned up in the nature of turfs, but few of the seeds can be supposed to fall in a bed of pulverized moulds; as none of them are found but what are made by the harrows, not the plough. But yet these trials must be often repeated, before we can venture absolutely to draw conclusions from them.

EXPERIMENT N° 5.

October 1763, marked four half roods in a piece of fallow land, field M*, and sowed them:

- N° 1, With $\frac{1}{2}$ a peck.
 2, With $\frac{3}{4}$ ditto,
 3, With 1 ditto.
 4, With $1\frac{1}{2}$ ditto.

Culture and management in all respects the same. The produce,

				Q.	B.	P.
N° 1,	-	-	-	0	0	2
2,	-	-	-	0	1	3
3,	-	-	-	0	3	0
4,	-	-	-	0	2	3

Seed and produce, calculated to the acre, are as follows :

			Q.	B.	P.
N° 1, Produce,	-	-	0	5	2
Seed,	-	-	0	1	0
Clear produce,	-	-	0	4	2
N° 2, Produce,	-	-	1	6	0
Seed,	-	-	0	1	2
Clear produce,	-	-	1	4	8
N° 3, Produce,	-	-	3	0	0
Seed,	-	-	0	2	0
Clear produce,	-	-	2	6	0
N° 4, Produce,	-	-	2	6	0
Seed,	-	-	0	3	0
Clear produce,	-	-	2	3	0

OBSERVATIONS.

This is the first experiment, in which the proportional increase of produce stops; and though but one in many, yet merits attention: we have remarked in the preceding trials, that the quantities of seed higher than the common one, viz. 2 bushels, have been attended with no very striking increase of produce; and this experiment, in which such increase of seed is followed by a decrease of product, combines with the former trials, in giving reason to believe at least, that the most beneficial is not far removed from the extent of these trials.

EXPERIMENT N° 6.

In October 1763, marked five half roods of fallow land in field M*, and sowed them :

- N° 1, With $\frac{1}{2}$ a peck.
- 2, With $\frac{3}{4}$ ditto.
- 3, With 1 ditto.
- 4, With $1\frac{1}{2}$ ditto.
- 5, With $1\frac{1}{2}$ ditto.

The culture, and every article of management, the same. The produce,

			Q.	B.	P.
N° 1,	-	-	0	0	2 $\frac{1}{2}$
2,	-	-	0	1	2

					Q.	B.	P.
N ^o 3,	-	-	-	-	0	2	3
4,	-	-	-	-	0	3	0
5,	-	-	-	-	0	3	1
Seed and produce, to the acre, are as follows:							
					Q.	B.	P.
N ^o 1, Produce,	-	-	-	-	0	5	0
Seed,	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	0	4	0
N ^o 2, Produce,	-	-	-	-	1	4	0
Seed,	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	1	2	2
N ^o 3, Produce,	-	-	-	-	2	6	0
Seed,	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	2	4	0
N ^o 4, Produce,	-	-	-	-	3	0	0
Seed,	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	2	5	2
N ^o 5, Produce,	-	-	-	-	3	2	0
Seed,	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	2	7	0

OBSERVATIONS.

This experiment, in the same field as the preceding one, and carried on under the same circumstances, is very different in the result; but such contradictions are to be looked for in agriculture, more perhaps than in any other branch of natural philosophy. It is only from a great number of trials repeatedly made, and drawn into averages, that truth can be expected to disclose itself: I shall extend these trials, and vary them, that I may reduce the matter to certainty upon my soils. And this conduct I think incumbent upon those who make agriculture either their business or amusement.

General OBSERVATIONS ON THE EXPERIMENTS of the year 1764.

There is upon the whole more uniformity in the result of these experiments, than often occurs in inquiries of this sort: one instance excepted, the largest quantity of seed produces the greatest crop. But this will best appear from throwing the whole into one view:

1 Bushel.

1 Bushel,

				Q.	B.	P.
Produce clear in Experiment N° 1,	-	-	-	0	7	0
2,	-	-	-	0	5	0
3,	-	-	-	0	6	0
4,	-	-	-	0	3	0
5,	-	-	-	0	4	2
6,	-	-	-	0	4	0

Average, 4B. 3P.

1 1/2 Bushels,

Produce clear in Experiment N° 2,	-	-	-	0	7	2
3,	-	-	-	0	6	2
4,	-	-	-	1	2	2
5,	-	-	-	1	4	2
6,	-	-	-	1	2	2

Average, 1Q. 1B. 2P.

2 Bushels,

Produce clear in Experiment N° 1,	-	-	-	2	2	0
2,	-	-	-	2	2	0
3,	-	-	-	2	0	0
4,	-	-	-	1	6	0
5,	-	-	-	2	6	0
6,	-	-	-	2	4	0

Average, 2Q. 2B.

2 1/2 Bushels,

Produce clear in Experiment N° 2,	-	-	-	2	3	2
3,	-	-	-	2	3	2
4,	-	-	-	2	3	2
6,	-	-	-	2	5	2

Average, 2Q. 4B.

3 Bushels,

Produce clear in Experiment N° 1,	-	-	-	2	6	0
2,	-	-	-	2	6	0
4,	-	-	-	2	5	0
5,	-	-	-	2	3	0
6,	-	-	-	2	7	0

Average, 2Q. 5B. 1P.

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G. R. A. I. N. W. RECAPITULATION.

Book I.
2. B. P.

Product per acre, from 1 bushel,	-	0	4	3
From $1\frac{1}{2}$,	-	1	1	2
From 2,	-	2	2	0
From $2\frac{1}{2}$,	-	2	4	0
From 3,	-	2	5	1

These tables, I apprehend, throw the result into as clear a light as can be desired. The increase of product following the decrease of feed is remarkable, and proves (as far as one year's trials can) that three bushels is the most advantageous of these quantities. The degree of progression will be seen from stating thus :

1 bushel and $\frac{1}{2}$,	-	-	-	-	-	1	1	2
1 ditto,	-	-	-	-	-	0	4	3
$1\frac{1}{2}$ better than 1, by	-	-	-	-	-	0	4	3
2 bushels,	-	-	-	-	-	2	2	0
$1\frac{1}{2}$ ditto,	-	-	-	-	-	1	1	2
2 better than $1\frac{1}{2}$, by	-	-	-	-	-	1	0	2
$2\frac{1}{2}$ bushels,	-	-	-	-	-	2	4	0
2 ditto,	-	-	-	-	-	2	2	0
$2\frac{1}{2}$ better than 2, by	-	-	-	-	-	0	2	0
3 bushels,	-	-	-	-	-	2	5	1
$2\frac{1}{2}$ ditto,	-	-	-	-	-	2	4	0
3 better than $2\frac{1}{2}$, by	-	-	-	-	-	0	1	1

Although the increase is no where broken, yet the order of its progression is very irregular. The rise from 1 bushel to $1\frac{1}{2}$ is only 4B. 3P.; whereas the same increase of seed from $1\frac{1}{2}$ to 2 is attended with a corresponding increase of produce of 1Q. 2B.: this irregularity is great. Advancing, this variation is again contradicted; for, instead of the same addition of seed working such effects in the last comparisons, the variation caused is but trifling.

It appears upon the whole, that 3 bushels of seed are, of the above quantities, the most proper for wheat: this piece of knowledge is very contrary to all the ideas I have met with in modern writings on the subject; but, as I have often remarked, the experience of one year is but trifling in the determination of such a point.

EXPE-

EXPERIMENT N^o 7.

In September 1764, marked eight half roods, in a piece of fallow, field L*, and sowed them as follows:

- N^o 1, With $\frac{1}{4}$ of a peck.
- 2, With $\frac{1}{2}$ ditto.
- 3, With $\frac{3}{4}$ ditto.
- 4, With 1 ditto.
- 5, With $1\frac{1}{4}$ ditto.
- 6, With $1\frac{1}{2}$ ditto.
- 7, With $1\frac{3}{4}$ ditto.
- 8, With 2 ditto.

All the management was the same. The produce,

	Q.	P.	B.
N ^o 1,	0	0	$3\frac{1}{2}$
2,	0	2	1
3,	0	3	0
4,	0	3	2
5,	0	3	3
6,	0	3	0
7,	0	3	1
8,	0	2	3

Seed deducted from these, the remainders are,

	Q.	B.	P.
N ^o 1,	0	0	$3\frac{1}{4}$
2,	0	2	$0\frac{1}{2}$
3,	0	2	$3\frac{1}{4}$
4,	0	3	1
5,	0	3	$1\frac{3}{4}$
6,	0	2	$2\frac{1}{2}$
7,	0	2	$3\frac{1}{4}$
8,	0	2	1

Seed and produce, per acre, are as follows:

	Q.	B.	P.
N ^o 1, Produce,	0	7	0
Seed,	0	0	2
Clear produce,	0	5	2
N ^o 2, Produce,	2	2	0
Seed,	0	1	0
Clear produce,	2	1	0

N ^o 3, Produce,				2, B. P.
Seed,				3 0 0
Clear produce,				0 1 2
N ^o 4, Produce,				2 0 0
Seed,				0 2 0
Clear produce,				3 2 0
N ^o 5, Produce,				3 6 0
Seed,				0 2 2
Clear produce,				3 3 2
N ^o 6, Produce,				3 0 0
Seed,				0 3 0
Clear produce,				2 5 0
N ^o 7, Produce,				3 2 0
Seed,				0 3 2
Clear produce,				2 6 2
N ^o 8, Produce,				2 6 0
Seed,				0 4 0
Clear produce,				2 2 0

OBSERVATIONS.

This experiment I must be allowed to rank as an important one; for the result is very clear and decisive. The product rising to a certain height, and then declining, is precisely the point I wished to ascertain. We here find, that 2 bushels, 2 pecks, yield the greatest clear produce; consequently to sow more is to submit to a certain loss; but herein let it be remembered, that it is the result only of one experiment, and in one year. Nor should it be forgotten that the season was *remarkably* dry; which circumstance, I apprehend, is favourable to the large quantity of seed, as a very wet season would probably have beaten corn down that was thicker sown than ordinary: not, however, that I remarked any thing of that sort in the trials of the last year.

One bushel and an half in this experiment yields a greater clear produce than 4 bushels: which is a vast difference; that is, it is more advantageous by 35s. *per* acre to sow 1½ than to sow 4 bushels. Can any argument be stronger?

Two bushels and an half yield a better crop than 4 bushels, by 2*l.* 7*s.* 6*d.*; and the difference in the price of seed, to estimate it no higher than 5*s.* per bushel, is 7*s.* 6*d.* so the whole difference is 2*l.* 15*s.* per acre.

These facts are so extremely important, that I shall certainly pursue these experiments in future years upon a larger scale than I have done in this.

The difference between 3 and 3½ bushels is counter to the general result; but variations of that sort must be expected in such trials as these.

EXPERIMENT N° 8.

The last week in september 1764 marked eight pieces of ground that had been well fallowed; each contained 10 square perches, field L*, and sowed as follows:

- N° 1, With 1 quart.
- 2, With 2 ditto.
- 3, With 3 ditto.
- 4, With ½ a peck.
- 5, With 5 quarts.
- 6, With 6 ditto.
- 7, With 7 ditto.
- 8, With 1 peck.

The culture and management was in all respects the same. The produce,

	P.	Q.	P.
N° 1,	-	-	1½
2,	-	-	1
3,	-	-	2
4,	-	-	3
5,	-	-	2½
6,	-	-	3
7,	-	-	2½
8,	-	-	1

Seed deducted from these, the remainders are,

	P.	Q.	P.
N° 1,	-	-	3
2,	-	-	6
3,	-	-	5
4,	-	-	4
5,	-	-	7
6,	-	-	2
7,	-	-	3
8,	-	-	0

Seed

Seed and produce, calculated *per acre*, are as follows:

				Q.	B.	P.
N° 1, Produce,	-	-	-	0	6	0
Seed,	-	-	-	0	0	2
Clear produce,	-	-	-	0	5	2
N° 2, Produce,	-	-	-	2	0	0
Seed,	-	-	-	0	1	0
Clear produce,	-	-	-	1	7	0
N° 3, Produce,	-	-	-	3	0	0
Seed,	-	-	-	0	1	2
Clear produce,	-	-	-	2	6	2
N° 4, Produce,	-	-	-	3	6	0
Seed,	-	-	-	0	2	0
Clear produce,	-	-	-	3	4	0
N° 5, Produce,	-	-	-	3	2	0
Seed,	-	-	-	0	2	2
Clear produce,	-	-	-	2	7	2
N° 6, Produce,	-	-	-	3	6	0
Seed,	-	-	-	0	3	0
Clear produce,	-	-	-	3	3	0
N° 7, Produce,	-	-	-	3	1	0
Seed,	-	-	-	0	3	2
Clear produce,	-	-	-	2	5	2
N° 8, Produce,	-	-	-	2	0	0
Seed,	-	-	-	0	4	0
Clear produce,	-	-	-	1	4	0

OBSERVATIONS.

The greatest clear produce in this experiment, is from 2 bushels of seed: that is, from the identical quantity commonly used by all the farmers in this neighbourhood. This result is remarkable; and it contradicts therein the last registered trial. But there are variations in it, which are quite unaccountable; three bushels appear to be more advantageous than $2\frac{1}{2}$, but not

so good as 2. How is this to be reconciled? These are contradictions, which either arise from chance, or from hidden causes. The difference between 2 pecks and a bushel is very great: indeed the increase of produce from 2 pecks to 2 bushels is in every step very considerable. I dismiss this trial, as one so various in the event, that I dare not reflect much on it.

EXPERIMENT N° 9.

Marked ten half roods in field O; a barley stubble well manured, and sowed with wheat the end of october 1764. The quantities as follows:

N° 1, With $\frac{1}{4}$ of a peck.

2, With $\frac{1}{2}$ ditto.

3, With $\frac{3}{4}$ ditto.

4, With 1 ditto.

5, With $1\frac{1}{4}$ ditto.

6, With $1\frac{1}{2}$ ditto.

7, With $1\frac{3}{4}$ ditto.

8, With 2 ditto.

9, With $2\frac{1}{4}$ ditto.

10, With $2\frac{1}{2}$ ditto.

There was no distinction made in any part of the culture: the produce was,

N°	1,	2,	3,	4,	5,	6,	7,	8,	9,	10,	Q.	B.	P.
	-	-	-	-	-	-	-	-	-	-	0	0	2
	-	-	-	-	-	-	-	-	-	-	0	1	0
	-	-	-	-	-	-	-	-	-	-	0	1	2
	-	-	-	-	-	-	-	-	-	-	0	1	$2\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	1	3
	-	-	-	-	-	-	-	-	-	-	0	1	2
	-	-	-	-	-	-	-	-	-	-	0	1	1
	-	-	-	-	-	-	-	-	-	-	0	1	1
	-	-	-	-	-	-	-	-	-	-	0	1	$0\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	1	0

Seed deducted, the remainders are as follows:

N°	1,	2,	3,	4,	5,	6,	7,	8,	9,	10,	Q.	B.	P.
	-	-	-	-	-	-	-	-	-	-	0	0	$1\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	0	$3\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	1	$1\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	1	$1\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	1	$1\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	1	$0\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	0	$3\frac{1}{2}$
	-	-	-	-	-	-	-	-	-	-	0	0	3
	-	-	-	-	-	-	-	-	-	-	0	0	$2\frac{1}{4}$
	-	-	-	-	-	-	-	-	-	-	0	0	$1\frac{1}{2}$

Seed and produce, calculated *per acre*, are as follows:

				Q.	B.	P.
N° 1, Produce,	-	-	-	0	4	0
Seed,	-	-	-	0	0	2
Clear produce,	-	-	-	0	3	2
N° 2, Produce,	-	-	-	1	0	0
Seed,	-	-	-	0	1	0
Clear produce,	-	-	-	0	7	0
N° 3, Produce,	-	-	-	1	4	0
Seed,	-	-	-	0	1	2
Clear produce,	-	-	-	1	2	2
N° 4, Produce,	-	-	-	1	5	0
Seed,	-	-	-	0	2	0
Clear produce,	-	-	-	1	3	0
N° 5, Produce,	-	-	-	1	6	0
Seed,	-	-	-	0	2	2
Clear produce,	-	-	-	1	3	2
N° 6, Produce,	-	-	-	1	4	0
Seed,	-	-	-	0	3	0
Clear produce,	-	-	-	1	1	0
N° 7, Produce,	-	-	-	1	2	0
Seed,	-	-	-	0	3	2
Clear produce,	-	-	-	0	6	2
N° 8, Produce,	-	-	-	1	2	0
Seed,	-	-	-	0	4	0
Clear produce,	-	-	-	0	6	0
N° 9, Produce,	-	-	-	1	1	0
Seed,	-	-	-	0	4	2
Clear produce,	-	-	-	0	4	2

N° 10, Produce,

N ^o 10, Produce,	-	-	-	-	1	0	0
Seed,	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	0	3	0

OBSERVATIONS.

It is here to be remarked, that, notwithstanding the dryness of this season, much of the corn in the latter number was laid. It fell of itself, from a weakness in the straw for want of air. The *ne plus ultra* of seed in this experiment is $2\frac{1}{2}$ bushels; which quantity and 2 bushels are the most successful. The rise to that point is pretty regular; and also the descent beyond it. But the ill success of a large quantity in this trial is much worse than I expected.

EXPERIMENT N^o 10.

In field L*, marked a piece of clover, that had been mown twice for hay, into eight parts, each half a rood, and sowed them, october 1764, as follows:

N^o 1, With $\frac{1}{4}$ of a peck.

2, With $\frac{1}{2}$ ditto.

3, With $\frac{3}{4}$ ditto.

4, With 1 ditto.

5, With $1\frac{1}{4}$ ditto.

6, With $1\frac{1}{2}$ ditto.

7, With $1\frac{3}{4}$ ditto.

8, With 2 ditto.

There was no distinction in culture: the produce,

					Q.	B.	P.
N ^o 1,	-	-	-	-	0	0	3
2,	-	-	-	-	0	2	1
3,	-	-	-	-	0	3	$0\frac{1}{2}$
4,	-	-	-	-	0	3	$2\frac{1}{2}$
5,	-	-	-	-	0	3	3
6,	-	-	-	-	0	3	1
7,	-	-	-	-	0	3	0
8,	-	-	-	-	0	2	1

The seed deducted, the remainders are:

					Q.	B.	P.
N ^o 1,	-	-	-	-	0	0	$2\frac{3}{4}$
2,	-	-	-	-	0	2	$0\frac{1}{2}$
3,	-	-	-	-	0	2	$3\frac{3}{4}$
4,	-	-	-	-	0	3	$1\frac{1}{2}$
5,	-	-	-	-	0	3	$1\frac{3}{4}$
6,	-	-	-	-	0	2	$3\frac{1}{2}$
7,	-	-	-	-	0	2	$2\frac{1}{4}$
8,	-	-	-	-	0	1	3

Seed and produce per acre, will appear from the following calculation :

			2. B. P.		
N° 1, Produce,	-	-	0	6	0
Seed,	-	-	0	0	0
Clear produce,	-	-	0	5	2
N° 2, Produce,	-	-	2	2	0
Seed,	-	-	0	1	0
Clear produce,	-	-	2	1	0
N° 3, Produce,	-	-	3	1	0
Seed,	-	-	0	1	2
Clear produce,	-	-	3	7	2
N° 4, Produce,	-	-	3	5	0
Seed,	-	-	0	2	0
Clear produce,	-	-	3	3	0
N° 5, Produce,	-	-	3	6	0
Seed,	-	-	0	2	2
Clear produce,	-	-	3	3	2
N° 6, Produce,	-	-	3	2	0
Seed,	-	-	0	3	0
Clear produce,	-	-	2	7	0
N° 7, Produce,	-	-	3	0	0
Seed,	-	-	0	3	2
Clear produce,	-	-	2	4	2
N° 8, Pro duc,	-	-	2	2	0
Seed,	-	-	0	4	0
Clear produce,	-	-	1	6	0

OBSERVATIONS.

This experiment coincides greatly with the last registered; and that circumstance gives a particular authority, as they were in different fields and soils; and one crop succeeding barley, a very bad one, and the other clover, and a very good one: yet in both 2 bushels and 2 pecks are the most advantageous quantity: this event, with the general result of the former trials,

gives no slight reason to pronounce at least, that the proper quantity of wheat seed for an acre of land, is very near this mark: variations in these sort of trials are sometimes so great and unexpected, that they almost demolish the most seemingly natural conclusions, which should make one cautious of determining; perhaps the quantity may be found to rise to 3 bushels, or to fall to 1, but between these points it must certainly be found.

The rise in produce in this experiment, from 2 pecks to a bushel, is very great. And the decrease from 3 bushels to $3\frac{1}{4}$ is also more considerable than I should have apprehended.

EXPERIMENT N° 11.

In field M*, marked, in october 1764, square perches of well-fallowed land, and sowed them as follows:

- N° 1, With $\frac{2}{3}$ of a pint.
 2, With $\frac{1}{4}$ and $\frac{1}{8}$ ditto.
 3, With $1\frac{1}{2}$ ditto.
 4, With $1\frac{3}{4}$ ditto.

All circumstances of culture, &c. were the same: the produce,

- N° 1, 1 quart and $\frac{1}{2}$.
 2, $4\frac{1}{2}$ ditto.
 3, 5 quarts, $\frac{1}{2}$ pint.
 4, 4 quarts.

Seed and produce, calculated per acre, are as follows:

					2.	B.	P.
N° 1, Produce,	-	-	-	-	9	7	2
Seed,	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	0	6	2
N° 2, Produce,	-	-	-	-	2	6	2
Seed,	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	2	4	2
N° 3, Produce,	-	-	-	-	3	2	1
Seed,	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	2	7	1
N° 4, Produce,	-	-	-	-	2	4	0
Seed,	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	2	0	0

OBSER-

OBSERVATIONS.

Let me in the first place apologize for the preceding fractions: those who would try a vast number of experiments must confine themselves to small plots of ground in many of them, unless their fortunes be much greater than mine: but this is no evil; as I have often remarked, and I apprehend proved, that a small *comparative* experiment is of better authority than a large one. Now, in applying square perches to such a use, the proportions must be calculated nicely, or the experiment will not be exact: there are men, whose knowledge in the fractional part of arithmetick would enable them perhaps to add and reduce my double fractions into whole numbers; but such matters are not of consequence; the grand point in these small experiments being the proportioning them to an acre; as all our ideas are relative to a single acre: and this is equally the case with the largest trials; for if five hundred are at once tried, the result is positively of no use, till it is reduced to so much an acre.

Three bushels of seed in the experiment before us are the most profitable quantity; two bushels the next. Four are much better than one, which is very contrary to the general assertions I have met with in many modern volumes. The vast rise in produce from one to two is striking.

EXPERIMENT N° 12.

In field M*, marked eight square perches, october 1764, on a piece of well-fallowed land; and sowed them,

N° 1, With $\frac{1}{3}$ of a pint.

2, With $\frac{2}{3}$ ditto.

3, With $\frac{3}{3}$ ditto.

4, With $\frac{4}{3}$ ditto.

5, With 1 ditto.

6, With $1\frac{1}{3}$ ditto.

7, With $1\frac{2}{3}$ ditto.

8, With $1\frac{3}{3}$ ditto.

The culture, &c. in all respects the same. The produce,

N°		P.	Q.	P.
1,	-	0	1	0
2,	-	0	2	1
3,	-	0	3	0
4,	-	0	5	0
5,	-	0	5	1
6,	-	0	4	0
7,	-	0	3	1
8,	-	0	1	$\frac{1}{2}$

The

The seed and produce, calculated *per acre*, are as follows :

			Q. B. P.		
N° 1, Produce,	-	-	0	5	0
Seed,	-	-	0	0	2
Clear produce,	-	-	0	4	2
N° 2, Produce,	-	-	1	4	2
Seed,	-	-	0	1	0
Clear produce,	-	-	0	3	2
N° 3, Produce,	-	-	1	7	0
Seed,	-	-	0	1	2
Clear produce,	-	-	1	5	2
N° 4, Produce,	-	-	3	1	0
Seed,	-	-	0	2	0
Clear produce,	-	-	2	7	0
N° 5, Produce,	-	-	3	3	2
Seed,	-	-	0	2	2
Clear produce,	-	-	3	1	0
N° 6, Produce,	-	-	2	4	0
Seed,	-	-	0	3	0
Clear produce,	-	-	2	1	0
N° 7, Produce,	-	-	2	1	2
Seed,	-	-	0	3	2
Clear produce,	-	-	1	6	0
N° 8, Produce,	-	-	1	5	3
Seed,	-	-	0	4	0
Clear produce,	-	-	1	1	3

OBSERVATIONS.

This trial corresponds much with the preceding ones. Two bushels and an half here appears, as in many other experiments, to be the best quantity of wheat feed. Two bushels is the next beneficial quantity. Three bushels the next. But both above and below these quantities, the products fall off much.

much. Here therefore is fresh reason to think, that the exact point will be found between these numbers viz. 2 and 3.

EXPERIMENT N° 13.

In field M*, marked 10 square perches of fallow land, October 1764; manured them equally with a compost of coal ashes, mortar rubbish, earth, &c. at the rate of 15 loads *per* acre, and sowed them as follows:

N° 1, With $\frac{1}{4}$ of a pint.

2, With $\frac{1}{2}$ ditto.

3, With $\frac{3}{4}$ ditto.

4, With 1 ditto.

5, With 1 ditto.

6, With 1 $\frac{1}{2}$ ditto.

7, With 1 $\frac{3}{4}$ ditto.

8, With 1 $\frac{3}{4}$ ditto.

9, With 1 $\frac{3}{4}$ ditto.

10, With 1 quart.

The culture, and every article of management, the same. The produce,

	P.	Q.	P.
N° 1,	-	-	-
2,	-	-	-
3,	-	-	-
4,	-	-	-
5,	-	-	-
6,	-	-	-
7,	-	-	-
8,	-	-	-
9,	-	-	-
10,	-	-	-

The seed and produce, calculated *per* acre, are as follows:

	Q.	B.	P.
N° 1, Produce,	-	-	-
Seed,	-	-	-
Clear produce,	-	-	-
N° 2, Produce,	-	-	-
Seed,	-	-	-
Clear produce,	-	-	-

N° 3, Produce,

				Q.	B.	P.
N° 3, Produce,	-	-	-	3	3	2
Seed,	-	-	-	0	1	2
Clear produce,	-	-	-	3	2	0
N° 4, Produce,	-	-	-	4	2	0
Seed,	-	-	-	0	2	0
Clear produce,	-	-	-	4	0	0
N° 5, Produce,	-	-	-	4	5	2
Seed,	-	-	-	0	2	2
Clear produce,	-	-	-	4	3	0
N° 6, Produce,	-	-	-	3	6	0
Seed,	-	-	-	0	3	0
Clear produce,	-	-	-	3	3	0
N° 7, Produce,	-	-	-	2	6	2
Seed,	-	-	-	0	3	2
Clear produce,	-	-	-	2	3	0
N° 8, Produce,	-	-	-	2	6	2
Seed,	-	-	-	0	4	0
Clear produce,	-	-	-	2	2	2
N° 9, Produce,	-	-	-	2	4	0
Seed,	-	-	-	0	4	2
Clear produce,	-	-	-	1	7	2
N° 10, Produce,	-	-	-	2	1	2
Seed,	-	-	-	0	5	0
Clear produce,	-	-	-	1	4	2

OBSERVATIONS.

These lands, being manured, form a fresh variation ; and the quantity of seed most advantageous continues yet the same, which seems to be a strong confirmation of the result of preceding trials.

The largeness of the product from 2 pecks in this experiment, compared with that of former ones, is remarkable ; and shews, I think, that when

land is very rich, or well manured, the loss by under-sowing is not so great as on poorer soils.

The ascending and descending series are an event of great importance in such trials; as it shews that too little seed may be sown, and likewise too much, and at the same time points out pretty nearly the excess of both errors.

OBSERVATIONS ON THE EXPERIMENTS of the year 1765.

The year 1765 was upon moist soils in this neighbourhood very favourable to wheat crops: so little rain fell during the summer, that it was justly called a drought. The general complexion of the year should always be had in mind, when the merit of any mode of culture is considered. A certain quantity of seed may be most advantageous in a wet year, and another quantity in a dry year: hence results the absolute necessity of taking averages of every thing; the mean number, or quantity, is in any case the important point that should be considered as decisive. I therefore pursue my former method of stating the averages of each year, and shall at last give the average of those averages.

Pecks,					Q.	B.	P.
Produce clear in Experiment N ^o 7,					0	5	2
8,					0	5	2
9,					0	3	2
10,					0	5	2
12,					0	4	2
13,					1	1	2

Average, 5B. 2½P.

1 Bushel,							
Produces clear in Experiment N ^o 7,					2	1	0
8,					1	7	0
9,					0	7	0
10,					2	1	0
11,					0	6	2
12,					0	3	2
13,					2	0	2

Average, 1Q. 3B. 3P.

1½ Bushel,

				2, B. P.		
1½ Bushel,						
Produce clear in Experiment N° 7,				2	6	2
8,				2	6	2
9,				1	2	2
10,				2	7	2
12,				1	5	2
13,				3	2	0
Average, 2Q. 3B. 3P.						

				2 Bushels,		
Produce clear in Experiment N° 7,				3	2	0
8,				3	4	0
9,				1	3	0
10,				3	3	0
11,				2	4	2
12,				2	7	0
13,				4	0	0
Average, 2Q. 7B. 3P.						

				2½ Bushels,		
Produce clear in Experiment N° 7,				3	3	2
8,				2	7	2
9,				1	3	2
10,				3	3	2
12,				3	1	0
13,				4	3	0
Average, 3Q. 1B.						

				3 Bushels,		
Produce clear in Experiment N° 7,				2	5	0
8,				3	3	0
9,				1	1	0
10,				2	7	0
11,				2	7	1
12,				2	1	0
13,				3	3	0
Average, 2Q. 5B.						

				3½ Bushels,		
Produce clear in Experiment N° 7,				2	6	2
8,				2	5	2
9,				0	6	2
10,				2	4	2
12,				1	6	0
13,				2	3	0
Average, 2Q. 1B. 1P.						

			4 Bushels,			Q. B. P.		
Produce clear in Experiment N ^o 7,	9	8	2	-	-	2	2	0
	12	7	0	8,	-	1	4	0
	10	0	0	9,	-	0	6	0
	8	2	2	10,	-	1	6	0
	8	8	1	11,	-	2	0	0
	8	8	1	12,	-	1	1	3
				13,	-	2	2	2
Average, 1 Q. 5 B. 1 P.								

			4½ Bushels,					
Produce clear in Experiment N ^o 9,	8	7	5	-	-	0	4	2
				13,	-	1	7	2
Average, 1 Q. 2 B.								

			5 Bushels,					
Produce clear in Experiment N ^o 9,	8	7	5	-	-	0	3	0
				13,	-	1	4	2
Average, 7 B. 3 P.								

RECAPITULATION.						Q. B. P.		
Product per acre, from ½ bushel,	-	-	-	-	-	0	5	2½
From 1 ditto,	-	-	-	-	-	1	3	3
From 1½ ditto,	-	-	-	-	-	2	3	3
From 2 ditto,	-	-	-	-	-	2	7	3
From 2½ ditto,	-	-	-	-	-	3	1	0
From 3 ditto,	-	-	-	-	-	2	5	0
From 3½ ditto,	-	-	-	-	-	2	1	1
From 4 ditto,	-	-	-	-	-	1	5	1
From 4½ ditto,	-	-	-	-	-	1	2	0
From 5 ditto,	-	-	-	-	-	0	7	3

The progression of the increase to a certain point and subsequent fall are remarkable: that point is the quantity of 2½ bushels, which appears, in this table, to be the most profitable quantity of seed for an acre of ground. Those writers who, in consequence of modern and (reason only consulted) very philosophical ideas, have asserted that the common quantity of wheat used to seed an acre of land, viz. 2 bushels, is too great, and that one bushel is highly sufficient, are mistaken, and that the farmers had much better increase than diminish their seed. But the comparison of the quantities will best appear from stating as follows :

Product

			Q.	B.	P.
Product from 1 bushel,	-	-	1	3	3
From $\frac{1}{2}$ ditto,	-	-	0	5	$2\frac{1}{2}$
1 better than $\frac{1}{2}$ by	-	-	0	6	$0\frac{1}{2}$
Product from $1\frac{1}{2}$,	-	-	2	3	3
From 1,	-	-	1	3	3
$1\frac{1}{2}$ better than 1 by	-	-	1	0	0
Product from 2,	-	-	2	7	3
From $1\frac{1}{2}$,	-	-	2	3	3
2 better than $1\frac{1}{2}$ by	-	-	0	4	0
Product from $2\frac{1}{2}$,	-	-	3	1	0
From 2,	-	-	2	7	3
$2\frac{1}{2}$ better than 2 by	-	-	0	1	1
Product from $2\frac{1}{2}$,	-	-	3	1	0
From 3,	-	-	2	5	0
$2\frac{1}{2}$ better than 3 by	-	-	0	4	0
Product from 3,	-	-	2	5	0
From $3\frac{1}{2}$,	-	-	2	1	1
3 better than $3\frac{1}{2}$ by	-	-	0	3	3
Product from $3\frac{1}{2}$,	-	-	2	1	1
From 4,	-	-	1	5	1
$3\frac{1}{2}$ better than 4 by	-	-	0	4	0
Product from 4,	-	-	1	5	1
From $4\frac{1}{2}$,	-	-	1	2	0
4 better than $4\frac{1}{2}$ by	-	-	0	3	1
Product from $4\frac{1}{2}$,	-	-	1	2	0
From 5,	-	-	0	7	3
$4\frac{1}{2}$ better than 5 by	-	-	0	2	1

One perpetually finds irregularities, in the result of agricultural experiments, that cannot be accounted for: the grand and material event is here clear and decisive, but the inferior parts of the comparison are confused:

the

the superiority of one bushel to two pecks, is 6 bushels; the increase, by adding another 2 pecks of seed, is a quarter: now, by reasoning one would suppose the first addition to be attended with the greatest effect; and some other variations are not such as reflection would have stated.

In this year's trials, $2\frac{1}{2}$ bushels are superior to 3, whereas in those of the last 3 were best: this is a variation of season, and shews that the grand average, which is drawn from all the others, must be of peculiar importance.

EXPERIMENT N^o 14.

The last week in september 1765, marked ten square perches, on a fallow piece, in field L*, and sowed them as follows:

N^o 1, With $\frac{1}{4}$ of a pint of seed.

2, With $\frac{2}{3}$ ditto.

3, With $\frac{3}{4}$ ditto.

4, With $\frac{4}{5}$ ditto.

5, With 1 ditto.

6, With $1\frac{1}{4}$ ditto.

7, With $1\frac{2}{3}$ ditto.

8, With $1\frac{3}{4}$ ditto.

9, With $1\frac{4}{5}$ ditto.

10, With 1 quart.

All the articles of culture, &c. were perfectly the same. The produce,

	P.	Q.	P.
N ^o 1,	-	-	-
2,	-	-	-
3,	-	-	-
4,	-	-	-
5,	-	-	-
6,	-	-	-
7,	-	-	-
8,	-	-	-
9,	-	-	-
10,	-	-	-

Seed and produce, calculated *per* acre, as follows:

	Q.	B.	P.
N ^o 1, Produce,	-	-	-
Seed,	-	-	-

Clear produce,

N^o 2, Produce,

Seed,

Clear produce,

N^o 3, Produce,

					2	B.	P.
N° 3, Produce,	-	-	-	-	2	2	3
Seed,	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	2	1	1
N° 4, Produce,	-	-	-	-	2	4	0
Seed,	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	2	2	0
N° 5, Produce,	-	-	-	-	2	6	2
Seed,	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	2	4	0
N° 6, Produce,	-	-	-	-	2	4	0
Seed,	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	2	1	0
N° 7, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	1	3	2
N° 8, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	1	3	0
N° 9, Produce,	-	-	-	-	1	2	0
Seed,	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	0	5	2
N° 10, Produce,	-	-	-	-	1	0	3
Seed,	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	0	3	3

OBSERVATIONS.

The year 1766 was a bad wheat one; the rains were almost incessant; weeds every where surprizingly thick and numerous: these experiments partook at large of the fate of the season; and most of the crops are accordingly very indifferent. I know not in what degree either thick or thin sowing is favourable to peculiar seasons; but, from the observations I have made, one circumstance seems rather decisive: it is, that the land, unless execrably

execrably poor, will be stocked with something: this, it must be confessed, is a mark of nature's bounty; but unfortunately weeds are to the farmer of no use: consequently he should sow corn enough to supply their place. This experiment proves the justness of the remark: for I should observe to the reader, that where most seed was sown, fewest weeds grew; but it proves, that in respect of produce, the quantity may be increased even in a very wet season, so high as to have no amends made for doing mischief to the weeds.

It is highly worthy of remark, that $2\frac{1}{2}$ bushels are in this trial the most beneficial quantity; or, in other words, the same as was found so last year—a very dry one. The progression of product, and the decrease, are in this experiment, as in former ones, extremely satisfactory and decisive.

EXPERIMENT N° 15.

The first week in October 1765, marked 10 square perches of clover land that had been mown twice, in field L*, and sowed them as follows:

- N° 1, With $\frac{1}{3}$ of a pint.
 2, With $\frac{2}{3}$ ditto.
 3, With $\frac{1}{2}$ ditto.
 4, With $\frac{1}{4}$ ditto.
 5, With 1 ditto.
 6, With $1\frac{1}{3}$ ditto.
 7, With $1\frac{2}{3}$ ditto.
 8, With $1\frac{3}{4}$ ditto.
 9, With $1\frac{1}{2}$ ditto.
 10, With 1 quart.

These perches carried (for a season) a pretty good countenance; every article of management was similar, and the times of performing every operation. The produce,

				P.	Q.	P.
N° 1,	-	-	-	0	1	$0\frac{1}{2}$
2,	-	-	-	0	3	1
3,	-	-	-	0	4	0
4,	-	-	-	0	4	1
5,	-	-	-	0	4	$1\frac{1}{2}$
6,	-	-	-	0	4	0
7,	-	-	-	0	3	$0\frac{1}{2}$
8,	-	-	-	0	3	0
9,	-	-	-	0	2	$0\frac{1}{2}$
10,	-	-	-	0	2	0

Seed and produce, calculated *per acre*, are as follows :

				Q. B. P.		
N° 1, Produce,	-	-	-	0	6	1
Seed,	-	-	-	0	0	2
Clear produce,	-	-	-	0	5	3
N° 2, Produce,	-	-	-	2	1	2
Seed,	-	-	-	0	1	0
Clear produce,	-	-	-	2	0	2
N° 3, Produce,	-	-	-	2	4	0
Seed,	-	-	-	0	1	2
Clear produce,	-	-	-	2	2	2
N° 4, Produce,	-	-	-	2	6	2
Seed,	-	-	-	0	2	0
Clear produce,	-	-	-	2	4	2
N° 5, Produce,	-	-	-	2	7	3
Seed,	-	-	-	0	2	2
Clear produce,	-	-	-	2	5	1
N° 6, Produce,	-	-	-	2	4	0
Seed,	-	-	-	0	3	0
Clear produce,	-	-	-	2	1	0
N° 7, Produce,	-	-	-	2	0	1
Seed,	-	-	-	0	3	2
Clear produce,	-	-	-	1	4	3
N° 8, Produce,	-	-	-	1	7	0
Seed,	-	-	-	0	4	0
Clear produce,	-	-	-	1	3	0
N° 9, Produce,	-	-	-	1	3	1
Seed,	-	-	-	0	4	2
Clear produce,	-	-	-	0	6	3

N^o 10, Produce,

Seed,

Clear produce,

Q. B. P.

1 2 0

0 5 0

The seed and produce, calculated as follows,

5 0 0

OBSERVATIONS.

It is to be remarked, that the variations of preparation for the crops in question, are points of importance; we find in the variety, of not only season, but preparation, that there is a quantity of seed, near to which the golden mean lies: it yet appears to be $2\frac{1}{2}$ bushels; and it is remarkable that the result should be the same, both upon tilth and also clover land. This general circumstance is very decisive; but how to account for some irregularities in the product, I know not: the difference is strangely great between N^o 1 and 2; and between N^o 2 and 3; that also between 8 and 9 and 9 and 10 is very great: in a trial more in large, accidental and perhaps unknown variations in the soil might occasion such circumstances; but in the breadth of a few perches, the similarity of the soil may at all times be chosen with the utmost precision; and as to accidents by vermin or otherwise, I was generally accurate enough to set them at defiance; when they did happen (which was very rarely), I never registered the trials any further.

EXPERIMENT N^o 16.

In september 1765, marked 10 square perches on a broad cast bean stubble, in field L*, and sowed them as follows:

N^o 1, With $\frac{1}{3}$ of a pint.2, With $\frac{2}{3}$ ditto.3, With $\frac{3}{3}$ ditto.4, With $\frac{4}{3}$ ditto.

5, With 1 ditto.

6, With $1\frac{1}{3}$ ditto.7, With $1\frac{2}{3}$ ditto.8, With $1\frac{3}{3}$ ditto.9, With $1\frac{4}{3}$ ditto.

10, With 1 quart.

All circumstances whatever of management perfectly alike. The produce,

N^o 1,

2,

3,

4,

5,

6,

7,

P. Q. P.

0 1 0

0 2 1

0 3 0

0 3 $1\frac{1}{2}$

0 4 0

0 4 1

0 3 0

	P.	Q.	P.
8,	-	-	-
9,	-	-	-
10,	-	-	-

The seed and produce, calculated *per acre*, are as follows :

N° 1, Produce,
Seed,

Q. B. P.

0 5 0
0 0 2

Clear produce,

0 4 2

N° 2, Produce,
Seed,

1 4 2
0 1 0

Clear produce,

1 3 2

N° 3, Produce,
Seed,

1 7 0
0 1 2

Clear produce,

1 5 2

N° 4, Produce,
Seed,

2 2 3
0 2 0

Clear produce,

2 0 3

N° 5, Produce,
Seed,

2 4 0
0 2 2

Clear produce,

2 1 2

N° 6, Produce,
Seed,

2 6 2
0 3 0

Clear produce,

2 3 2

N° 7, Produce,
Seed,

1 7 0
0 3 2

Clear produce,

1 3 2

N° 8, Produce,
Seed,

1 5 3
0 4 0

Clear produce,

1 1 3

[H b 2]

N° 9, Produce,

					Q. B. P.
N ^o 9, Produce,	-	-	-	-	1 5 3
Seed,	-	-	-	-	0 4 2
Clear produce,	-	-	-	-	1 1 1
N ^o 10, Produce,	-	-	-	-	1 2 0
Seed,	-	-	-	-	0 4 0
Clear produce,	-	-	-	-	0 5 0

OBSERVATIONS.

This experiment, notwithstanding the point of superiority varies 2 pecks from the preceding, yet agrees much with the general run of it. Its being on a bean stubble, forms a variation in preparation; that some would have thought probable to cause much greater exceptions. It would be endless to remark every variety in the progression, which is singular—such variations are not of a tenth part the consequence of the general cast of the trial; and besides, some of them in this, as in the preceding, are unaccountable, without an amazing chain was brought into one view; and thrown into every light possible. Many circumstances in such a case, which now appear strange and inconsistent, would then probably appear perfectly consistent with principles; and but a part of one vast whole of important fact.

EXPERIMENT N^o 17.

In october 1765, marked 10 square perches of fallow, in field M*, and sowed them as follows:

- N^o 1, With $\frac{1}{3}$ of a pint.
 2, With $\frac{2}{3}$ ditto.
 3, With $\frac{1}{2}$ ditto.
 4, With $\frac{4}{5}$ ditto.
 5, With 1 ditto.
 6, With $1\frac{1}{3}$ ditto.
 7, With $1\frac{2}{3}$ ditto.
 8, With $1\frac{3}{4}$ ditto.
 9, With $1\frac{4}{5}$ ditto.
 10, With 1 quart.

The culture in every respect the same. The produce,

					P. Q. P.
N ^o 1,	-	-	-	-	0 1 1
2,	-	-	-	-	0 2 0
3,	-	-	-	-	0 3 1
4,	-	-	-	-	0 4 0
5,	-	-	-	-	0 4 1

The seed and produce, calculated per acre, are as follows:

			Q.	B.	P.
N° 1, Produce,	-	-	1	0	3
Seed,	-	-	0	0	2
Clear produce,	-	-	1	0	1
N° 2, Produce,	-	-	1	4	2
Seed,	-	-	0	1	0
Clear produce,	-	-	1	3	2
N° 3, Produce,	-	-	2	1	2
Seed,	-	-	0	1	2
Clear produce,	-	-	2	0	0
N° 4, Produce,	-	-	2	7	3
Seed,	-	-	0	2	0
Clear produce,	-	-	2	5	3
N° 5, Produce,	-	-	3	1	0
Seed,	-	-	0	2	2
Clear produce,	-	-	2	6	2
N° 6, Produce,	-	-	2	4	0
Seed,	-	-	0	3	0
Clear produce,	-	-	2	1	0
N° 7, Produce,	-	-	2	1	2
Seed,	-	-	0	3	2
Clear produce,	-	-	1	6	0
N° 8, Produce,	-	-	2	2	3
Seed,	-	-	0	4	0
Clear produce,	-	-	1	6	3
N° 9, Produce,	-	-	1	7	0
Seed,	-	-	0	4	2
Clear produce,	-	-	1	2	2

N° 10, Produce,

No 18 Produce,	-	-	I	4	2
Seed,	-	-	O	5	O
Clear produce,	-	-	O	7	2

OBSERVATIONS.

In this experiment two bushels and an half preserves its superiority; and that in a variation of soil and preparation: the crops are generally good, considering the season. The rise is remarkably gradual; but the decrease of product is broke in a manner that is difficult to account for: three bushels and an half are inferior to three bushels, by three bushels in produce; and yet four are superior to three, by three pecks; whereas, according to all the preceding trials and one's reason, it ought to have been inferior; consequently the variation is the greater: in the degree of the preceding number, this variation amounts to near 4 bushels. But these deviations from all rule, how mortifying soever they may be to the experimenter, must yet for ever be expected in agricultural trials.

EXPERIMENT N^o 19.

The last week in september 1765, marked 10 square perches of potatoe land, in field M*, and sowed them in the following manner:

- N^o 1, With $\frac{1}{5}$ of a pint.
 2, With $\frac{2}{5}$ ditto.
 3, With $\frac{3}{5}$ ditto.
 4, With $\frac{4}{5}$ ditto.
 5, With 1 ditto.
 6, With $1\frac{1}{5}$ ditto.
 7, With $1\frac{2}{5}$ ditto.
 8, With $2\frac{3}{5}$ ditto.
 9, With $2\frac{4}{5}$ ditto.
 10, With 1 quart.

Culture and management in all respects the same. The produce,

Nº	1	2	3	4	5	6	7	8	9	10	P.	Q.	P.
1,	-	-	-	-	-	-	-	-	-	-	0	1	1½
2,	-	-	-	-	-	-	-	-	-	-	0	2	0
3,	-	-	-	-	-	-	-	-	-	-	0	3	1½
4,	-	-	-	-	-	-	-	-	-	-	0	4	1
5,	-	-	-	-	-	-	-	-	-	-	0	4	1½
6,	-	-	-	-	-	-	-	-	-	-	0	3	1½
7,	-	-	-	-	-	-	-	-	-	-	0	3	0
8,	-	-	-	-	-	-	-	-	-	-	0	2	1½
9,	-	-	-	-	-	-	-	-	-	-	0	2	1
10,	-	-	-	-	-	-	-	-	-	-	0	2	1

Seed and produce, calculated per acre, are as follows:

N° 1, Produce,	-	-	-	2	0	3
Seed,	-	-	-	0	0	2
Clear produce,	-	-	-	1	0	1
N° 2, Produce,	-	-	-	1	2	0
Seed,	-	-	-	0	1	0
Clear produce,	-	-	-	1	1	0
N° 3, Produce,	-	-	-	2	2	3
Seed,	-	-	-	0	1	2
Clear produce,	-	-	-	2	1	1
N° 4, Produce,	-	-	-	2	6	2
Seed,	-	-	-	0	2	0
Clear produce,	-	-	-	2	4	2
N° 5, Produce,	-	-	-	2	7	3
Seed,	-	-	-	0	2	2
Clear produce,	-	-	-	2	5	1
N° 6, Produce,	-	-	-	2	2	3
Seed,	-	-	-	0	3	0
Clear produce,	-	-	-	1	7	3
N° 7, Produce,	-	-	-	1	7	0
Seed,	-	-	-	0	3	2
Clear produce,	-	-	-	1	3	2
N° 8, Produce,	-	-	-	1	5	3
Seed,	-	-	-	0	4	0
Clear produce,	-	-	-	1	1	3
N° 9, Produce,	-	-	-	1	4	2
Seed,	-	-	-	0	4	2
Clear produce,	-	-	-	1	0	0

N ^o 10, Produce,	-	-	-	1	4	2
Seed,	-	-	-	0	5	0
Clear produce,	-	-	-	0	7	2

OBSERVATIONS.

Two bushels and 2 pecks again form the quantity that is most advantageous: and this superiority extends through a surprizing number of variations. In other respects the event of this trial is somewhat irregular. It is for instance extremely remarkable, that the addition of two pecks of seed in N^o 2 should produce no more than 3 pecks superiority to N^o 1. This by reason is perfectly unaccountable. The decrease in produce is however extremely regular, and proves strongly the effect of too much feed.

General OBSERVATIONS ON THE EXPERIMENTS OF THE YEAR 1766.

The year 1766 was so generally wet, and for so many weeks the rains were almost perpetual, that most arable crops suffered in this neighbourhood extremely. The weeds in every field made a most threatening appearance; and the expence of eradicating them from such as would admit it was immense: the season was therefore the very reverse of the year 1765. I shall proceed to draw the averages of this year as I did before, that being the only method of determining the real event.

	2 Pecks,		2 B. P.
Produce clear in Experiment N ^o 14,	-	-	1 0 1
15,	-	-	0 5 3
16,	-	-	0 4 2
17,	-	-	0 7 0
18,	-	-	1 0 1
19,	-	-	1 0 1
Average, 7B.			

	1 Bushel,		
Produce clear in Experiment N ^o 14,	-	-	1 6 0
15,	-	-	2 0 2
16,	-	-	1 3 2
17,	-	-	1 1 0
18,	-	-	1 3 2
19,	-	-	1 1 0
Average, 12. 3B. 3P.			

1 1/4 Bushel,

1½ Bushel,		Q. B. P.		
Produce clear in Experiment N° 14,		2	1	1
15,		2	2	2
16,		1	5	2
17,		2	1	1
18,		2	0	0
19,		2	2	1
Average, 2Q. 0B. 2P.				

2 Bushels,		Q. B. P.		
Produce clear in Experiment N° 14,		2	2	2
15,		2	4	2
16,		2	0	3
17,		2	2	0
18,		2	5	3
19,		2	4	2
Average, 2Q. 3B. 1P.				

2½ Bushels,		Q. B. P.		
Produce clear in Experiment N° 14,		2	4	0
15,		2	5	1
16,		2	1	2
17,		2	4	0
18,		2	6	2
19,		2	5	1
Average, 2Q. 4B. 1P.				

3 Bushels,		Q. B. P.		
Produce clear in Experiment N° 14,		2	1	0
15,		2	1	0
16,		2	3	2
17,		2	4	3
18,		2	1	0
19,		1	7	3
Average, 2Q. 1B. 3P.				

3½ Bushels,		Q. B. P.		
Produce clear in Experiment N° 14,		1	3	2
15,		1	4	3
16,		1	3	2
17,		1	6	0
18,		1	6	0
19,		1	3	2
Average, 1Q. 4B. 2P.				

4 Bushels,
Produce clear in Experiment N^o 14,
15,
16,
17,
18,
19,
Average, 12. 2B. 3P.

4½ Bushels,
Produce clear in Experiment N^o 14,
15,
16,
17,
18,
19,
Average, 12.

5 Bushels,
Produce clear in Experiment N^o 14,
15,
16,
17,
18,
19,
Average, 5B. 2P.

RECAPITULATION.				Q.	B.	P.
Product per acre, from ½ bushel,				0	7	0
From 1,				1	3	3
From 1½,				2	0	2
From 2,				2	3	1
From 2½,				2	4	1
From 3,				2	1	3
From 3½,				1	4	2
From 4,				1	2	3
From 4½,				1	0	0
From 5,				0	5	2

It is with much satisfaction that I find the trials of this year, the season of which was so extremely different from the foregoing one, to yield (as far as they extend) a decisive instruction; which is the more remarkable, in agreeing

	Q.	B.	P.
1 bushel,	1	3	3
$\frac{1}{2}$ ditto,	0	7	0
1 better than $1\frac{1}{2}$, by	0	4	3
1 bushel and $\frac{1}{2}$,	2	0	2
1 ditto,	1	3	3
$1\frac{1}{2}$ better than 1, by	0	4	3
2 bushels,	2	3	1
$1\frac{1}{2}$ ditto,	2	0	2
2 better than $1\frac{1}{2}$, by	0	2	3
$2\frac{1}{2}$ bushels,	2	4	1
2 ditto,	2	3	1
$2\frac{1}{2}$ better than 2, by	0	1	0
$2\frac{1}{2}$ bushels,	2	4	1
3 ditto,	2	1	3
$2\frac{1}{2}$ better than 3, by	0	2	2
3 bushels,	2	1	3
$3\frac{1}{2}$,	1	4	2
3 better than $3\frac{1}{2}$, by	0	5	1
$3\frac{1}{2}$ bushels,	1	4	2
4 ditto,	1	2	3
$3\frac{1}{2}$ better than 4, by	0	1	3

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	Q.	B.	P.		Q.	B.	P.
4 bushels,	7	0	0	-	1	2	3
4½ ditto,	1	0	0	-	1	0	0
4 better than 4½, by	-	-	-	-	0	2	3
4½ bushels,	7	0	0	-	1	0	0
5 ditto,	1	0	0	-	0	5	2
4½ better than 5, by	-	-	-	-	0	2	2

EXPERIMENT N° 20.

The first week in October 1766, marked ten square perches on a piece of fallow land in field L*, and sowed them as follows:

- N° 1, With $\frac{1}{3}$ of a pint.
 2, With $\frac{2}{3}$ ditto.
 3, With $\frac{3}{3}$ ditto.
 4, With $\frac{4}{3}$ ditto.
 5, With 1 pint.
 6, With $1\frac{1}{3}$ ditto.
 7, With $1\frac{2}{3}$ ditto.
 8, With $1\frac{3}{3}$ ditto.
 9, With $1\frac{4}{3}$ ditto.
 10, With 1 quart.

The culture and management were in all respects the same. The produce,

	P.	Q.	P.
N° 1,	1	0	1
2,	0	1	1
3,	0	3	0
4,	0	3	1½
5,	0	4	0½
6,	0	4	1
7,	0	3	0
8,	0	2	1½
9,	0	2	0
10,	0	2	0

Seed and produce, per acre, are as follows:

	Q.	B.	P.
N° 1, Produce,	0	7	2
Seed,	0	0	2
Clear produce,	0	7	0

N° 2, Produce,

				Q. B. P.	
N° 2, Produce,	-	-	-	0 7 2	4 bushels
Seed,	-	-	-	0 1 0	4 ditto
Clear produce,	-	-	-	0 6 2	4 better than 4
N° 3, Produce,	-	-	-	1 7 0	4 1/2 bushels
Seed,	-	-	-	0 1 2	2 ditto
Clear produce,	-	-	-	1 5 2	4 1/2 better than 4
N° 4, Produce,	-	-	-	2 2 3	
Seed,	-	-	-	0 2 0	
Clear produce,	-	-	-	2 0 3	
N° 5, Produce,	-	-	-	2 5 1	N° 1, With 1
Seed,	-	-	-	0 2 2	2 With 2
Clear produce,	-	-	-	2 2 3	3 With 3
N° 6, Produce,	-	-	-	2 6 2	4 With 4
Seed,	-	-	-	0 3 0	5 With 5
Clear produce,	-	-	-	2 3 2	6 With 6
N° 7, Produce,	-	-	-	1 7 0	7 With 7
Seed,	-	-	-	0 3 2	8 With 8
Clear Produce,	-	-	-	1 3 2	9 With 9
N° 8, Produce,	-	-	-	1 5 3	10 With 10
Seed,	-	-	-	0 4 0	
Clear produce,	-	-	-	1 1 3	
N° 9, Produce,	-	-	-	1 2 0	
Seed,	-	-	-	0 4 2	
Clear produce,	-	-	-	0 5 2	
N° 10, Produce,	-	-	-	1 2 0	
Seed,	-	-	-	0 5 0	
Clear produce,	-	-	-	0 5 0	

OBSER-

OBSERVATIONS.

The year 1767 was peculiarly unfavourable to the production of corn; and especially wheat. The fields in general yielded large burthens of straw, and many of them carried an appearance, that promised a very different event from what ensued. If there was any variation, I think, this year was upon the whole worse in the product of wheat than the preceding.

This extreme unfavourableness of the seasons forms a new variation of circumstance, in which to consider the quantity of seed: in the trial before us, the result is something different from most of the preceding experiments. Three bushels are the most beneficial quantity of seed; which is more by 2 pecks than before appeared to be the best. The similitude of product in N^o 1 and 2 is extremely remarkable, and utterly unaccountable from reason; that the clear product from a bushel of seed should be less than from half a bushel, is surprizing, and would naturally give suspicions of some accidents, were I not absolutely certain of the accuracy of the trial in every particular. Some few disasters I have at different times met with, but the number extremely small, and I was always particularly cautious to strike such trials out of my register. Had I formed these experiments in large, a multitude of circumstances, almost unknown, in the nature of the soil, respecting peculiarities of season, might occasion variations that did not arise from the quantity of seed; but in so small a space as ten perches, one is certain, with a little attention, of the soil being perfectly similar. But, after all, there will eternally be variations, in the most accurately-conducted trials, that surpass the bounds of reason.

EXPERIMENT N^o 21.

The second week in october 1766 marked 10 square perches of fallow land in field L*, and sowed them as follows:

- N^o 1, With $\frac{1}{5}$ of a pint.
- 2, With $\frac{2}{5}$ ditto.
- 3, With $\frac{3}{5}$ ditto.
- 4, With $\frac{4}{5}$ ditto.
- 5, With 1 pint.
- 6, With $1\frac{1}{5}$ ditto.
- 7, With $1\frac{2}{5}$ ditto.
- 8, With $1\frac{3}{5}$ ditto.
- 9, With $1\frac{4}{5}$ ditto.
- 10, With 1 quart.

Soil,

Soil, culture, and general management, the same in all respects. The produce,

N^o 1,

2,

3,

4,

5,

6,

7,

8,

9,

10,

Seed and produce, calculated per acre, are as follows:

N^o 1, Produce,

Seed,

Clear produce,

N^o 2, Produce,

Seed,

Clear produce,

N^o 3, Produce,

Seed,

Clear produce,

N^o 4, Produce,

Seed,

Clear produce,

N^o 5, Produce,

Seed,

Clear produce,

N^o 6, Produce,

Seed,

Clear produce,

N^o 7, Produce,

Seed,

Clear produce,

Q. P. P.

1 1 1

2 2 2

3 3 3

4 4 4

5 5 5

6 6 6

7 7 7

8 8 8

9 9 9

10 10 10

11 11 11

12 12 12

13 13 13

14 14 14

15 15 15

16 16 16

17 17 17

18 18 18

19 19 19

20 20 20

21 21 21

22 22 22

23 23 23

24 24 24

25 25 25

26 26 26

27 27 27

28 28 28

29 29 29

30 30 30

31 31 31

32 32 32

33 33 33

34 34 34

35 35 35

36 36 36

37 37 37

38 38 38

39 39 39

40 40 40

41 41 41

42 42 42

43 43 43

44 44 44

45 45 45

					Q.	B.	P.
N ^o 8, Produce,	-	-	-	-	1	5	3
Seed,	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	1	1	3
N ^o 9, Produce,	-	-	-	-	1	4	2
Seed,	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	1	0	0
N ^o 10, Produce,	-	-	-	-	1	2	0
Seed,	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	0	5	0

OBSERVATIONS.

The result of this experiment coincides with the general effect of former years: but is very different from the last inserted. Two bushels and two pecks continue to be the best quantity: but there are variations in other quantities, that one cannot well account for. The superiority of a bushel and half of seed over a bushel is much smaller than I should have supposed; and two being inferior to one and an half is totally contrary to every idea impressed by the general effect of these trials. The decline of clear product is regular, and such as might be easily apprehended.

EXPERIMENT N^o 22.

The last week in october 1766, marked 10 square perches in field L*, upon a piece of clover lay that had been mown for hay twice; they were sowed in the following manner:

N^o 1, With $\frac{1}{5}$ of a pint.

2, With $\frac{2}{5}$ ditto.

3, With $\frac{3}{5}$ ditto.

4, With $\frac{4}{5}$ ditto.

5, With 1 ditto.

6, With $1\frac{1}{5}$ ditto.

7, With $1\frac{2}{5}$ ditto.

8, With $1\frac{3}{5}$ ditto.

9, With $1\frac{4}{5}$ ditto.

10, With 1 quart.

Culture and management in all respects the same. The produce,

					P.	Q.	P.
N ^o 1,	-	-	-	-	0	1	$1\frac{1}{2}$
2,	-	-	-	-	0	3	0
3,	-	-	-	-	0	3	$1\frac{1}{2}$
4,	-	-	-	-	0	4	0

					Q.	P.	B.
N° 5,	-	-	-	-	0	4	1
6,	-	-	-	-	0	4	0
7,	-	-	-	-	0	3	1
8,	-	-	-	-	0	3	0
9,	-	-	-	-	0	2	1
10,	-	-	-	-	0	2	0

Seed and produce, *per* acre, as follows:

					Q.	B.	P.
N° 1, Produce,	-	-	-	-	1	0	3
Seed,	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	1	0	1
N° 2, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	1	6	0
N° 3, Produce,	-	-	-	-	2	2	3
Seed,	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	2	1	1
N° 4, Produce,	-	-	-	-	2	4	0
Seed,	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	2	2	0
N° 5, Produce,	-	-	-	-	2	6	2
Seed,	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	2	4	0
N° 6, Produce,	-	-	-	-	2	4	0
Seed,	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	2	1	0
N° 7, Produce,	-	-	-	-	2	1	2
Seed,	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	1	6	0
N° 8, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	3	0	

				Q.	B.	P.
N° 9, Produce,	-	-	-	1	4	2
Seed,	-	-	-	0	4	2
Clear produce,	-	-	-	1	0	0
N° 10, Produce,	-	-	-	1	2	0
Seed,	-	-	-	0	5	0
Clear produce,	-	-	-	0	5	0

OBSERVATIONS.

This trial is remarkably regular: the rise to two bushels and an half is gradual, and the succeeding fall the same: it is a strong confirmation that that quantity of seed is the most beneficial.

EXPERIMENT N° 23.

The middle of october 1766 marked 10 square perches of bean land, that had been sown broad cast and hand-hoed, and sowed them as follows, with wheat:

N° 1, With $\frac{1}{5}$ of a pint.

2, With $\frac{2}{5}$ ditto.

3, With $\frac{3}{5}$ ditto.

4, With $\frac{4}{5}$ ditto.

5, With 1 ditto.

6, With $1\frac{1}{5}$ ditto.

7, With $1\frac{2}{5}$ ditto.

8, With $1\frac{3}{5}$ ditto.

9, With $1\frac{4}{5}$ ditto.

10, With 1 quart.

Culture and general management in all respects the same. The produce,

					P.	Q.	P.
N° 1,	-	-	-	-	0	1	1
2,	-	-	-	-	0	2	0
3,	-	-	-	-	0	2	$1\frac{1}{2}$
4,	-	-	-	-	0	2	$1\frac{1}{2}$
5,	-	-	-	-	0	3	1
6,	-	-	-	-	0	3	0
7,	-	-	-	-	0	2	$1\frac{1}{2}$
8,	-	-	-	-	0	2	0
9,	-	-	-	-	0	2	1
10,	-	-	-	-	0	2	0

Seed

Seed and produce, calculated *per* acre, are as follows :

					Q.	B.	P.
N° 1, Produce,	-	-	-	-	0	7	2
Seed,	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	0	7	0
N° 2, Produce,	-	-	-	-	1		0
Seed,	-	-	-	-	0		0
Clear produce,	-	-	-	-	1	1	0
3, Produce,	-	-	-	-	1	5	3
Seed,	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	1	4	1
4, Produce,	-	-	-	-	1	5	3
Seed,	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	1	3	3
N° 5, Produce,	-	-	-	-	2	1	2
Seed,	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	1	7	0
N° 6, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	1	4	0
N° 7, Produce,	-	-	-	-	1	5	3
Seed,	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	1	2	1
N° 8, Produce,	-	-	-	-	1	2	0
Seed,	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	0	6	0
N° 9, Produce,	-	-	-	-	1	3	2
Seed,	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	0	7	0

N° 10, Produce,

				Q.	B.	P.
N ^o 10, Produce,	-	-	-	1	2	0
Seed,	-	-	-	0	5	0
Clear produce,	-	-	-	0	5	0

OBSERVATIONS.

Two bushels and an half of seed continue under every variation to be the most profitable quantity; and as this experiment was made on bean land, that had been not manured, it is a strong confirmation of the benefit of sowing that portion of seed in preference to any other. But the clear produce of two bushels being inferior to that of one and an half, must be ranked amongst those accidental variations that cannot from reason be accounted for: and $4\frac{1}{2}$ being superior to four is also a mystery of the same kind. Such circumstances might possibly be experimentally accounted for, if this course had been extended to a series of twenty years, instead of only five: by arranging the trials into series respecting the soil and preparation, some general conclusions might arise, that would justify all exceptions to the general rules: but this at present is only ideal.

EXPERIMENT N^o 24.

The last week in october 1766 marked 10 square perches of clover land, that had been mown twice in field M*, and sowed them with wheat as follows:

- N^o 1, With $\frac{1}{5}$ of a pint.
 2, With $\frac{2}{5}$ ditto.
 3, With $\frac{3}{5}$ ditto.
 4, With $\frac{4}{5}$ ditto.
 5, With 1 ditto.
 6, With $1\frac{1}{5}$ ditto.
 7, With $1\frac{2}{5}$ ditto.
 8, With $1\frac{3}{5}$ ditto.
 9, With $1\frac{4}{5}$ ditto.
 10, With 1 quart.

The culture and management were in all respects the same. The produce,

						P.	Q.	P.
N ^o 1,	-	-	-	-	-	0	2	0
2,	-	-	-	-	-	0	2	$1\frac{1}{2}$
3,	-	-	-	-	-	0	3	1
4,	-	-	-	-	-	0	3	$1\frac{1}{2}$
5,	-	-	-	-	-	0	4	1
6,	-	-	-	-	-	0	3	$1\frac{1}{2}$
7,	-	-	-	-	-	0	3	0
8,	-	-	-	-	-	0	3	0

9,	-	-	-	-	P.	2.	P.
10,	-	-	-	-	0	2	0
					0	2	0

The quantity of feed and the product, calculated *per* acre, are as follows :

					2.	B.	P.
N° 1, Produce,	-	-	-	-	1	2	0
Seed,	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	1	1	2
N° 2, Produce,	-	-	-	-	1	5	3
Seed,	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	1	4	3
N° 3, Produce,	-	-	-	-	2	1	2
Seed,	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	2	0	0
N° 4, Produce,	-	-	-	-	2	2	3
Seed,	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	2	0	3
N° 5, Produce,	-	-	-	-	2	6	2
Seed,	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	2	4	0
N° 6, Produce,	-	-	-	-	2	2	3
Seed,	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	1	7	3
N° 7, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	1	3	2
N° 8, Produce,	-	-	-	-	1	7	0
Seed,	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	1	3	0
N° 9, Produce,	-	-	-	-	1	2	0
Seed,	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	0	5	2

N^o 10, Produce,

Seed,

Clear produce,

0	5	0
0	5	0

1 8 1

OBSERVATIONS.

It is observable on this experiment, that the quantities of seed near the point of greatest benefit, are attended with a better crop than was common this year; in which many fields did not yield more than five bushels per acre: two bushels and an half yield a clear product of five sacks per acre; which, considering the season, is a good crop: but the largest quantity of seed gives no more than five bushels; of such great importance is it to sow no more than the land requires. The superiority of four bushels over four and an a half is greater than I should have apprehended: and the similarity of N^o 3 and 4 is not to be accounted for.

EXPERIMENT N^o 25.

The middle of october 1766 marked 10 square perches of fallow land, in field M*, and sowed them as follows:

N^o 1, With $\frac{1}{3}$ of a pint.2, With $\frac{2}{3}$ ditto.3, With $\frac{1}{3}$ ditto.4, With $\frac{4}{5}$ ditto.

5, With 1 ditto.

6, With $1\frac{1}{3}$ ditto.7, With $1\frac{2}{3}$ ditto.8, With $1\frac{3}{5}$ ditto.9, With $1\frac{4}{5}$ ditto.

10, With 1 quart.

Tillage and general management the same.

The produce,

P. Q. P.

N ^o 1,	-	-	-	-	0	1	1½
2,	-	-	-	-	0	2	0
3,	-	-	-	-	0	3	0
4,	-	-	-	-	0	3	1½
5,	-	-	-	-	0	4	0
6,	-	-	-	-	0	3	1½
7,	-	-	-	-	0	3	0
8,	-	-	-	-	0	2	0
9,	-	-	-	-	0	2	0
10,	-	-	-	-	0	1	1½

Seed,

The seed and produce, calculated per acre, are as follows :

N^o 1, Produce,

Seed,

Clear produce,

N^o 2, Produce,

Seed,

Clear produce,

N^o 3, Produce,

Seed,

Clear produce,

N^o 4, Produce,

Seed,

Clear produce,

N^o 5, Produce,

Seed,

Clear produce,

N^o 6, Produce,

Seed,

Clear produce,

N^o 7, Produce,

Seed,

Clear produce,

N^o 8, Produce,

Seed,

Clear produce,

N^o 9, Produce,

Seed,

Clear produce,

Q. B. P.

2 0 3

0 0 2

1 0 1

1 2 0

0 1 0

1 0 0

1 7 0

0 1 2

1 5 2

2 3 3

0 2 0

2 1 3

2 4 0

0 2 2

2 1 2

2 3 3

0 3 0

2 0 3

1 7 0

0 3 2

1 3 2

1 2 0

0 4 0

0 6 0

1 2 0

0 4 2

0 5 2

N^o 10, Produce,

2 B. 2		1 Bushel		2 B. P.	
2	2	N ^o 10, Produce,	-	2	0
2	2	1 Seed,	-	2	0
1	1	2	-	2	0
1	4	Clear produce,	-	0	3 3
0	0	2	-	0	3 3
2	2	1	-	0	3 3

OBSERVATIONS.

The superiority of 2 bushels in this experiment is not very contrary to the general result, the difference between that quantity and 2 $\frac{1}{2}$ not being considerable: the least attentive reader must have remarked, that small variations are to be expected, even in those results of which we think we have the clearest idea. The difference is but trifling, in this trial, between 2 bushels, 2 $\frac{1}{2}$, and 3; but that between 3 $\frac{1}{2}$ and 4, is very great.

General OBSERVATIONS ON THE EXPERIMENTS of the year 1767.

This year was equally, and I think, if any thing, more unfavourable to the production of corn than that of 1766. I had some fields, as well as small experiments, that were prepared in a very complete manner, but the product trifling. It was a general complaint in the neighbourhood. This unfavourableness of the season does no prejudice to the authority of these experiments; on the contrary, rather confirms it: the result of better years is given; and, if the general average points out one quantity of seed to be preferable to any other, the design of these experiments is answered. I shall proceed, as in former years, to lay before the reader to draw the average produce from each quantity.

2 Pecks,		2 B. P.	
Produce clear in Experiment N ^o 20,	20, 18 -	0	7 0
21,	21, 22 -	0	7 0
22,	22, 23 -	1	0 1
23,	23, 24 -	0	7 0
24,	24, 25 -	1	1 2
25,	25, -	1	0 1
Average, 7 B. 3 P.			

1 Bushel		2 B. P.	
Produce clear in Experiment N ^o 20,	20, 21 -	0	6 2
21,	21, 22 -	1	4 3
22,	22, 23 -	1	6 0
23,	23, 24 -	1	1 0
24,	24, 25 -	1	4 3
25,	25, -	1	1 0
Average, 1 $\frac{1}{2}$ B. 3 P.			

Chap. 8.

W H A T

1859

Produce clear in Experiment N° 20,		1 1/2 Bushels,	2 B. P.
21,	2	5	2
22,	1	1	1
23,	4	1	1
24,	2	0	0
25,	1	5	2

Average, 1 1/2 B. 2 P.

The superiority of 2 bushels in this experiment is not very clearly shown, the difference between that quantity and 1 1/2 not being considerable; the least attentive reader will have remarked, that small variations are to be expected even in those results which we have the cleared ideal. The difference is but trifling, in this trial, between 2 bushels and 1 1/2, but that between 2 and 1 1/2 is very great.

Produce clear in Experiment N° 20,		2 Bushels,	2 B. P.
21,	1	3	3
22,	2	0	3
23,	3	1	3
24,	2	0	3
25,	2	1	3

Average, 2 B. 2 P.

This year was equally, and I think, more unfavourable to the production of corn than that of 1858. I had prepared in a very complete manner, but the small experiments, that were prepared in a very complete manner, but the product trifling. It was a general opinion in the neighbourhood. This unfavourable of the season does not, however, detract from the results of better years; on the contrary, rather confirms it: the result of better years is given; and, if the general average points out one quantity of seed to be preferable to any other, the design of these experiments is answered. I shall proceed, as in former years, to lay before the reader to draw the average produce from each quantity.

Produce clear in Experiment N° 20,		3 Bushels,	2 B. P.
21,	2	3	2
22,	1	1	0
23,	4	0	0
24,	1	7	3
25,	2	0	3

Average, 2 1/2 B.

Produce clear in Experiment N° 20,

Produce clear in Experiment N° 20,		3 1/2 Bushels,	2 B. P.
21,	1	3	2
22,	1	6	0
23,	1	2	1
24,	1	3	2
25,	1	3	2

Average, 1 1/2 B. 2 P.

[L 12]

Average, 1 1/2 B. 2 P.

The following manner:
 1. The quantity of each variety over and over will best appear from stating
 2. this table are gradual, though not perfectly regular; but the degree
 3. is for this reason, that a small imperfection is decisive. Both the rise and
 4. into the account, and consequently, no allowances remain to be made.
 5. cases of a varying nature - but in the table of averages, all these are
 6. of collection, as it may be, owing to some counting or other
 7. really matters of import, which single experiment a trial varies
 8. B. P.

Experiment N°	Produce clear	Produce from 1 bushel	Product from 1 bushel
20,	3	1	5
21,	3	1	0
22,	3	1	0
23,	3	1	7
24,	3	1	5
25,	3	1	5
Average, 6	3	1	5

Produce clear in Experiment N ^o	5 Bushels,	Product from 2 ⁵	Product from 1 st Experiment
20,	5	5	5
21,	5	5	5
22,	5	5	5
23,	5	5	5
24,	5	5	5
25,	5	5	5
Average, 4B. 3P.	5	5	5

RECAPITULATION.

Average product, from 2 pecks,				
From 1 bushel,	0	-	-	7 3
From 1 ½ ditto,	0	-	-	2 3
From 2 ditto,	0	-	-	6 2
From 2 ½ ditto,	0	-	-	7 2
From 3 ditto,	0	-	-	2 0
From 3 ½ ditto,	0	-	-	0 0
From 4 ditto,	0	-	-	3 2
From 4 ½ ditto,	0	-	-	0 3
From 5 ditto,	0	-	-	6 1
	0	-	-	4 3

This table is a fresh confirmation of the result of former years experience. Two bushels and an half maintain their superiority, under every variation. The difference between 2 and $2\frac{1}{2}$, and between $2\frac{1}{2}$ and 3, is not indeed very great ; but then, it is to be considered, that what appear trifles are, in general averages,

Averages really matters of importance. In a single experiment, a small variation is not of consequence, as it may be owing to several contingent or accidental causes of a varying nature: but in the table of averages, all these are taken into the account, and consequently no allowances remain to be made. It is for this reason, that a small superiority is decisive. Both the rise and fall in this table are gradual, though not perfectly regular: but the degree of superiority in each quantity over another will best appear from stating in the following manner:

			Q. B. P.		
Product from 1 bushel,	From 1 ditto,	1 better than 1, by	1	2	3
Product from 1 1/2,	From 1,	1 1/2 better than 1, by	1	6	2
Product from 2,	From 1 1/2,	2 better than 1 1/2, by	1	7	2
Product from 2 1/2,	From 2,	2 1/2 better than 2, by	2	2	0
Product from 3,	From 2 1/2,	3 better than 2 1/2, by	2	0	0
Product from 3 1/2,	From 3,	3 1/2 better than 3, by	2	0	0
Product from 4,	From 3 1/2,	4 better than 3 1/2, by	1	3	2
Product from 4 1/2,	From 4,	4 1/2 better than 4, by	1	0	3
Product from 5,	From 4 1/2,	5 better than 4 1/2, by	1	0	3
Product from 5 1/2,	From 5,	5 1/2 better than 5, by	1	0	3
Product from 6,	From 5 1/2,	6 better than 5 1/2, by	1	0	3
Product from 6 1/2,	From 6,	6 1/2 better than 6, by	1	0	3
Product from 7,	From 6 1/2,	7 better than 6 1/2, by	1	0	3
Product from 7 1/2,	From 7,	7 1/2 better than 7, by	1	0	3
Product from 8,	From 7 1/2,	8 better than 7 1/2, by	1	0	3
Product from 8 1/2,	From 8,	8 1/2 better than 8, by	1	0	3
Product from 9,	From 8 1/2,	9 better than 8 1/2, by	1	0	3
Product from 9 1/2,	From 9,	9 1/2 better than 9, by	1	0	3
Product from 10,	From 9 1/2,	10 better than 9 1/2, by	1	0	3
Product from 10 1/2,	From 10,	10 1/2 better than 10, by	1	0	3
Product from 11,	From 10 1/2,	11 better than 10 1/2, by	1	0	3
Product from 11 1/2,	From 11,	11 1/2 better than 11, by	1	0	3
Product from 12,	From 11 1/2,	12 better than 11 1/2, by	1	0	3
Product from 12 1/2,	From 12,	12 1/2 better than 12, by	1	0	3
Product from 13,	From 12 1/2,	13 better than 12 1/2, by	1	0	3
Product from 13 1/2,	From 13,	13 1/2 better than 13, by	1	0	3
Product from 14,	From 13 1/2,	14 better than 13 1/2, by	1	0	3
Product from 14 1/2,	From 14,	14 1/2 better than 14, by	1	0	3
Product from 15,	From 14 1/2,	15 better than 14 1/2, by	1	0	3
Product from 15 1/2,	From 15,	15 1/2 better than 15, by	1	0	3
Product from 16,	From 15 1/2,	16 better than 15 1/2, by	1	0	3
Product from 16 1/2,	From 16,	16 1/2 better than 16, by	1	0	3
Product from 17,	From 16 1/2,	17 better than 16 1/2, by	1	0	3
Product from 17 1/2,	From 17,	17 1/2 better than 17, by	1	0	3
Product from 18,	From 17 1/2,	18 better than 17 1/2, by	1	0	3
Product from 18 1/2,	From 18,	18 1/2 better than 18, by	1	0	3
Product from 19,	From 18 1/2,	19 better than 18 1/2, by	1	0	3
Product from 19 1/2,	From 19,	19 1/2 better than 19, by	1	0	3
Product from 20,	From 19 1/2,	20 better than 19 1/2, by	1	0	3
Product from 20 1/2,	From 20,	20 1/2 better than 20, by	1	0	3
Product from 21,	From 20 1/2,	21 better than 20 1/2, by	1	0	3
Product from 21 1/2,	From 21,	21 1/2 better than 21, by	1	0	3
Product from 22,	From 21 1/2,	22 better than 21 1/2, by	1	0	3
Product from 22 1/2,	From 22,	22 1/2 better than 22, by	1	0	3
Product from 23,	From 22 1/2,	23 better than 22 1/2, by	1	0	3
Product from 23 1/2,	From 23,	23 1/2 better than 23, by	1	0	3
Product from 24,	From 23 1/2,	24 better than 23 1/2, by	1	0	3
Product from 24 1/2,	From 24,	24 1/2 better than 24, by	1	0	3
Product from 25,	From 24 1/2,	25 better than 24 1/2, by	1	0	3
Product from 25 1/2,	From 25,	25 1/2 better than 25, by	1	0	3
Product from 26,	From 25 1/2,	26 better than 25 1/2, by	1	0	3
Product from 26 1/2,	From 26,	26 1/2 better than 26, by	1	0	3
Product from 27,	From 26 1/2,	27 better than 26 1/2, by	1	0	3
Product from 27 1/2,	From 27,	27 1/2 better than 27, by	1	0	3
Product from 28,	From 27 1/2,	28 better than 27 1/2, by	1	0	3
Product from 28 1/2,	From 28,	28 1/2 better than 28, by	1	0	3
Product from 29,	From 28 1/2,	29 better than 28 1/2, by	1	0	3
Product from 29 1/2,	From 29,	29 1/2 better than 29, by	1	0	3
Product from 30,	From 29 1/2,	30 better than 29 1/2, by	1	0	3
Product from 30 1/2,	From 30,	30 1/2 better than 30, by	1	0	3
Product from 31,	From 30 1/2,	31 better than 30 1/2, by	1	0	3
Product from 31 1/2,	From 31,	31 1/2 better than 31, by	1	0	3
Product from 32,	From 31 1/2,	32 better than 31 1/2, by	1	0	3
Product from 32 1/2,	From 32,	32 1/2 better than 32, by	1	0	3
Product from 33,	From 32 1/2,	33 better than 32 1/2, by	1	0	3
Product from 33 1/2,	From 33,	33 1/2 better than 33, by	1	0	3
Product from 34,	From 33 1/2,	34 better than 33 1/2, by	1	0	3
Product from 34 1/2,	From 34,	34 1/2 better than 34, by	1	0	3
Product from 35,	From 34 1/2,	35 better than 34 1/2, by	1	0	3
Product from 35 1/2,	From 35,	35 1/2 better than 35, by	1	0	3
Product from 36,	From 35 1/2,	36 better than 35 1/2, by	1	0	3
Product from 36 1/2,	From 36,	36 1/2 better than 36, by	1	0	3
Product from 37,	From 36 1/2,	37 better than 36 1/2, by	1	0	3
Product from 37 1/2,	From 37,	37 1/2 better than 37, by	1	0	3
Product from 38,	From 37 1/2,	38 better than 37 1/2, by	1	0	3
Product from 38 1/2,	From 38,	38 1/2 better than 38, by	1	0	3
Product from 39,	From 38 1/2,	39 better than 38 1/2, by	1	0	3
Product from 39 1/2,	From 39,	39 1/2 better than 39, by	1	0	3
Product from 40,	From 39 1/2,	40 better than 39 1/2, by	1	0	3
Product from 40 1/2,	From 40,	40 1/2 better than 40, by	1	0	3
Product from 41,	From 40 1/2,	41 better than 40 1/2, by	1	0	3
Product from 41 1/2,	From 41,	41 1/2 better than 41, by	1	0	3
Product from 42,	From 41 1/2,	42 better than 41 1/2, by	1	0	3
Product from 42 1/2,	From 42,	42 1/2 better than 42, by	1	0	3
Product from 43,	From 42 1/2,	43 better than 42 1/2, by	1	0	3
Product from 43 1/2,	From 43,	43 1/2 better than 43, by	1	0	3
Product from 44,	From 43 1/2,	44 better than 43 1/2, by	1	0	3
Product from 44 1/2,	From 44,	44 1/2 better than 44, by	1	0	3
Product from 45,	From 44 1/2,	45 better than 44 1/2, by	1	0	3
Product from 45 1/2,	From 45,	45 1/2 better than 45, by	1	0	3
Product from 46,	From 45 1/2,	46 better than 45 1/2, by	1	0	3
Product from 46 1/2,	From 46,	46 1/2 better than 46, by	1	0	3
Product from 47,	From 46 1/2,	47 better than 46 1/2, by	1	0	3
Product from 47 1/2,	From 47,	47 1/2 better than 47, by	1	0	3
Product from 48,	From 47 1/2,	48 better than 47 1/2, by	1	0	3
Product from 48 1/2,	From 48,	48 1/2 better than 48, by	1	0	3
Product from 49,	From 48 1/2,	49 better than 48 1/2, by	1	0	3
Product from 49 1/2,	From 49,	49 1/2 better than 49, by	1	0	3
Product from 50,	From 49 1/2,	50 better than 49 1/2, by	1	0	3
Product from 50 1/2,	From 50,	50 1/2 better than 50, by	1	0	3
Product from 51,	From 50 1/2,	51 better than 50 1/2, by	1	0	3
Product from 51 1/2,	From 51,	51 1/2 better than 51, by	1	0	3
Product from 52,	From 51 1/2,	52 better than 51 1/2, by	1	0	3
Product from 52 1/2,	From 52,	52 1/2 better than 52, by	1	0	3
Product from 53,	From 52 1/2,	53 better than 52 1/2, by	1	0	3
Product from 53 1/2,	From 53,	53 1/2 better than 53, by	1	0	3
Product from 54,	From 53 1/2,	54 better than 53 1/2, by	1	0	3
Product from 54 1/2,	From 54,	54 1/2 better than 54, by	1	0	3
Product from 55,	From 54 1/2,	55 better than 54 1/2, by	1	0	3
Product from 55 1/2,	From 55,	55 1/2 better than 55, by	1	0	3
Product from 56,	From 55 1/2,	56 better than 55 1/2, by	1	0	3
Product from 56 1/2,	From 56,	56 1/2 better than 56, by	1	0	3
Product from 57,	From 56 1/2,	57 better than 56 1/2, by	1	0	3
Product from 57 1/2,	From 57,	57 1/2 better than 57, by	1	0	3
Product from 58,	From 57 1/2,	58 better than 57 1/2, by	1	0	3
Product from 58 1/2,	From 58,	58 1/2 better than 58, by	1	0	3
Product from 59,	From 58 1/2,	59 better than 58 1/2, by	1	0	3
Product from 59 1/2,	From 59,	59 1/2 better than 59, by	1	0	3
Product from 60,	From 59 1/2,	60 better than 59 1/2, by	1	0	3
Product from 60 1/2,	From 60,	60 1/2 better than 60, by	1	0	3
Product from 61,	From 60 1/2,	61 better than 60 1/2, by	1	0	3
Product from 61 1/2,	From 61,	61 1/2 better than 61, by	1	0	3
Product from 62,	From 61 1/2,	62 better than 61 1/2, by	1	0	3
Product from 62 1/2,	From 62,	62 1/2 better than 62, by	1	0	3
Product from 63,	From 62 1/2,	63 better than 62 1/2, by	1	0	3
Product from 63 1/2,	From 63,	63 1/2 better than 63, by	1	0	3
Product from 64,	From 63 1/2,	64 better than 63 1/2, by	1	0	3
Product from 64 1/2,	From 64,	64 1/2 better than 64, by	1	0	3
Product from 65,	From 64 1/2,	65 better than 64 1/2, by	1	0	3
Product from 65 1/2,	From 65,	65 1/2 better than 65, by	1	0	3
Product from 66,	From 65 1/2,	66 better than 65 1/2, by	1	0	3
Product from 66 1/2,	From 66,	66 1/2 better than 66, by	1	0	3
Product from 67,	From 66 1/2,	67 better than 66 1/2, by	1	0	3
Product from 67 1/2,	From 67,	67 1/2 better than 67, by	1	0	3
Product from 68,	From 67 1/2,	68 better than 67 1/2, by	1	0	3
Product from 68 1/2,	From 68,	68 1/2 better than 68, by	1	0	3
Product from 69,	From 68 1/2,	69 better than 68 1/2, by	1	0	3
Product from 69 1/2,	From 69,	69 1/2 better than 69, by	1	0	3
Product from 70,	From 69 1/2,	70 better than 69 1/2, by	1	0	3
Product from 70 1/2,	From 70,	70 1/2 better than 70, by	1	0	3
Product from 71,	From 70 1/2,	71 better than 70 1/2, by	1	0	3
Product from 71 1/2,	From 71,	71 1/2 better than 71, by	1	0	3
Product from 72,	From 71 1/2,	72 better than 71 1/2, by	1	0	3
Product from 72 1/2,	From 72,	72 1/2 better than 72, by	1	0	3
Product from 73,	From 72 1/2,	73 better than 72 1/2, by	1	0	3
Product from 73 1/2,	From 73,	73 1/2 better than 73, by	1	0	3
Product from 74,	From 73 1/2,	74 better than 73 1/2, by	1	0	3
Product from 74 1/2,	From 74,	74 1/2 better than 74, by	1	0	3
Product from 75,	From 74 1/2,	75 better than 74 1/2, by	1	0	3
Product from 75 1/2,	From 75,	75 1/2 better than 75, by	1	0	3
Product from 76,	From 75 1/2,	76 better than 75 1/2, by	1	0	3
Product from 76 1/2,	From 76,	76 1/2 better than 76, by	1	0	3
Product from 77,	From 76 1/2,	77 better than 76 1/2, by	1	0	3
Product from 77 1/2,	From 77,	77 1/2 better than 77, by	1	0	3
Product from 78,	From 77 1/2,	78 better than 77 1/2, by	1	0	3
Product from 78 1/2,	From 78,	78 1/2 better than 78, by	1	0	3
Product from 79,	From 78 1/2,	79 better than 78 1/2, by	1	0	3
Product from 79 1/2,	From 79,	79 1/2 better than 79, by	1	0	3
Product from 80,	From 79 1/2,	80 better than 79 1/2, by	1	0	3
Product from 80 1/2,	From 80,	80 1/2 better than 80, by	1	0	3
Product from 81,	From 80 1/2,	81 better than 80 1/2, by	1	0	3
Product from 81 1/2,	From 81,	81 1/2 better than 81, by	1	0	3
Product from 82,	From 81 1/2,	82 better than 81 1/2, by	1	0	3
Product from 82 1/2,	From 82,	82 1/2 better than 82, by	1	0	3
Product from 83,	From 82 1/2,	83 better than 82 1/2, by	1	0	3
Product from 83 1/2,	From 83,	83 1/2 better than 83, by	1	0	3
Product from 84,	From 83 1/2,	84 better than 83 1/2, by	1	0	3
Product from 84 1/2,	From 84,	84 1/2 better than 84, by	1	0	3
Product from 85,	From 84 1/2,	85 better than 84 1/2, by	1	0	3
Product from 85 1/2,	From 85,	85 1/2 better than 85, by	1	0	3
Product from 86,	From 85 1/2,	86 better than 85 1/2, by	1	0	3
Product from 86 1/2,	From 86,	86 1/2 better than 86, by	1	0	3
Product from 87,	From 86 1/2,	87 better than 86 1/2, by	1	0	3
Product from 87 1/2,	From 87,	87 1/2 better than 87, by	1	0	3
Product from 88,	From 87 1/2,	88 better than 87 1/2, by	1	0	3
Product from 88 1/2,	From 88,	88 1/2 better than 88, by	1	0	3
Product from 89,	From 88 1/2,	89 better than 88 1/2, by	1	0	3
Product from 89 1/2,	From 89,	89 1/2 better than 89, by	1	0	3
Product from 90,	From 89 1/2,	90 better than 89 1/2, by	1	0	3
Product from 90 1/2,	From 90,	90 1/2 better than 90, by	1	0	3
Product from 91,	From 90 1/2,	91 better than 90 1/2, by	1	0	3
Product from 91 1/2,	From 91,	91 1/2 better than 91, by	1	0	3
Product from 92,	From 91 1/2,	92 better than 91 1/2, by	1	0	3
Product from 92 1/2,	From 92,	92 1/2 better than 92, by	1	0	3
Product from 93,	From 92 1/2,	93 better than 92 1/2, by	1	0	3
Product from 93 1/2,	From 93,	93 1/2 better than 93, by	1	0	3
Product from 94,	From 93 1/2,	94 better than 93 1/2, by	1	0	3
Product from 94 1/2,	From 94,	94 1/2 better than 94, by	1	0	3
Product from 95,	From 94 1/2,	95 better than 94 1/2, by	1	0	3
Product from 95 1/2,	From 95,	95 1/2 better than 95, by	1	0	3
Product from 96,	From 95 1/2,	96 better than 95 1/2, by	1	0	3
Product from 96 1/2,	From 96,	96 1/2 better than 96, by	1	0	3
Product from 97,	From 96 1/2,	97 better than 96 1/2, by	1	0	3
Product from 97 1/2,	From 97,	97 1/2 better than 97, by	1	0	3
Product from 98,	From 97 1/2,	98 better than 97 1/2, by	1	0	3
Product from 98 1/2,	From 98,	98 1/2 better than 98, by	1	0	3
Product from 99,	From 98 1/2,	99 better than 98 1/2, by	1	0	3
Product from 99 1/2,	From 99,				

P. B.	Product from 4½	From 5	4½ better than 5, by	2. B. P.
1	2	2	1	6 1
0	2	2	1	4 3
3	1	1	1	1 2
0	0	0	0	1 2

General RECAPITULATION

It is here absolutely requisite, to throw the result of the preceding trials, during the years 1764, 1765, 1766, and 1767, into one complete view, that the averages of the series may be taken. Such general averages may be called the essence of experiments: they certainly are alone the points that carry authority and conviction.

Produce clear in	2 Pecks,	P. B. P.
1765,	-	0 5 2
1766,	-	0 7 0
1767,	-	0 7 3
Average, 6B. 3P.	-	-

Produce clear in	1 Bushel,	P. B. P.
1764,	-	0 4 3
1765,	-	1 3 3
1766,	-	3 3 3
1767,	-	1 2 3
Average, 1Q. 1B. 3P.	-	-

Produce clear in	1½ Bushel,	P. B. P.
1764,	-	1 1 2
1765,	-	2 3 3
1766,	-	2 6 2
1767,	-	1 6 2
Average, 1Q. 7B.	-	-

Produce clear in	2 Bushels,	P. B. P.
1764,	-	2 2 0
1765,	-	2 7 3
1766,	-	2 3 3
1767,	-	1 7 2
Average, 2Q. 3B.	-	-

Produce clear in	2½ Bushels,	P. B. P.
1764,	-	2 4 0
1765,	-	3 1 0
1766,	-	2 4 1
1767,	-	2 2 0
Average, 2Q. 4B. 3P.	-	-

Average, 22.3B.

Average, 12.5B. 3P.

Average, 1Q. 2B. 3P.

Average, 12.

Average, 6B.

				Produce clear in	6	3
Produce of 2 pecks,	-			1764	0	
1 bushel,	-			1765	1	3
1½ ditto,	-			1766	1	7
2 ditto,	-			1767	2	3
2½ ditto,	-			Average	2	4
3 ditto,	-			B.	2	3
3½ ditto,	-				I	5
4 ditto,	-			Produce clear in	1	2
4½ ditto,	-			1764	1	0
5 ditto,	-			1765	1	0
				1766	0	6
				1767	0	0
				The		
				Average		
				B.		

The following table will assist in shewing the degree in which each quantity has merit :

	Q.	B.	P.
Produce from 1 bushel,	1	1	3
2 pecks,	0	6	3
1 bushel better than 2 pecks, by	0	3	0
1½ bushel,	1	7	0
1 ditto,	1	1	3
1½ better than 1, by	0	5	1
2 bushels,	2	3	0
1½ ditto,	1	7	0
2 better than 1½, by	0	4	0
2½ bushels,	2	4	3
2 ditto,	2	3	0
2½ better than 2, by	0	1	3
2½ bushels,	2	4	3
3 ditto,	2	3	0
2½ better than 3, by	0	1	3
3 bushels,	2	3	0
3½ ditto,	1	5	3
3 better than 3½, by	0	5	1
3½ bushels,	1	5	3
4 ditto,	1	2	3
3½ better than 4, by	0	3	0
4 bushels,	1	2	3
4½ ditto,	1	0	0
4 better than 4½, by	0	2	3
4½ bushels,	1	0	0
5 ditto,	0	6	0
4½ better than 5, by	0	2	0

It is in general to be observed, that these trials take in, not only four seasons of a very different nature, but also two very material variations of soil, viz. a clayey loam, and a gravelly loam; the one more inclinable to clay than loam, the other more inclinable to gravel than loam: and besides these variations, those of *preparation* are striking; for the crops here specified succeeded not only fallows, but fallow crops of all sorts.

Upon an average of all these variations, the quantity of two bushels and an half is found to be the most advantageous portion of seed for an acre of land. It is remarkable, that this quantity is at least very near the average of the common practice: which should cure us of too great a contempt for every part of the common farmer's practice merely because it is such. Many modern writers have been pretty voluminous in their censures of the farmers, for sowing too much wheat seed. Even so small a quantity as two pecks has been mentioned as a sufficiency to feed an acre of land; but one bushel is asserted to be sufficient by numerous authors. These gentlemen should at least confine their assertions to certain soils. The mischief is, they hazard random conjectures, and give general instruction, without having tried experiments, and consequently include one soil as well as another. The trials I here venture to the publick eye are conclusive upon two soils; and as those two are very different in their natures, perhaps some of my readers may think the result of such numerous experiments of some efficacy relative to all. But this I venture merely as an idea, and by no means as a conclusion that any wise belongs to the trials themselves.

The most beneficial quantity is the grand object of the enquiry; for which reason it would be useless to examine the variations, which contradict a general idea in the proportions of the other quantities: I have, in the course of the register, remarked many of them; but their appearance in the tables of general averages is by no means very threatening; perhaps they would have totally disappeared in the course of a few more years. I never reflect on the necessity I am under of publishing an imperfect work without pain: it was the ardent wish of my soul, to render every part of agriculture, as far as my soils extended, philosophically certain; but leaving Suffolk broke my designs too much to come near such utility.

PART II.

Of the QUANTITY of WHEAT SEED, in the NEW Method.

THE reader will doubtless remark, that part of the subject of this section has been anticipated under the general article of *Culture and produce in the new method*, where I inserted many experiments in large, to compare the value of different distances of rows, and corresponding quantities of seed: such trials were most properly arranged among the registers of the crops of whole fields, and larger pieces of ground; but many others were tried in small, which, for the sake of perspicuity, are here inserted by themselves: the two objects to appearance, *distance of rows*, and *quantity of seed*, are in reality one; for it is splitting of hairs to separate them.

Under this head I tried a vast number of small experiments: to insert them all (as well in other cases as at present), would swell this work to an unconfessionable size. I should be obliged to divide them into sets, respecting distance—quantity—and year, each of which would call for peculiar reflections, and numerous subdivisions. But let it not be imagined, that I reject the insertion because they were in small; I should be more inclined to omit them for being in large: I cannot help often repeating, that (very peculiar tracts of country excepted) all comparative experiments should be in small: that accurate similarity, which is requisite in them, is scarce ever to be obtained in trials in large: even accidents happen to the latter, as well as the former; but the number of the one may be so much greater than of the other, that the total omission in one case may not be greatly felt, whereas in the other an experimenter would probably have gaps in his series of years without a trial.---My only motive for not inserting them is their great number; many conclusions of importance would arise from them; but there is a certain compass beyond which one cannot with propriety pass: this is not an age in which to compose folios. Some apology is requisite in those parts of my register where such omissions are the greatest. In every section of every chapter I leave out some, merely with an eye to reduce a voluminous work.

I shall proceed to extract from my trials on this head some that are tolerably satisfactory; but, as a complete series are avoided, I shall insert them in a miscellaneous manner.

EXPERIMENT No. I.

In autumn 1763 marked in field L*, part of a bed 4 feet 6 inches wide that was arched up for drilling, into five divisions, each a perch long, and sowed them as follows in single rows.

N^o 1, With $\frac{1}{4}$ lb. of seed.

2, With $\frac{1}{2}$ lb.

3, With $\frac{3}{4}$ lb.

4, With 1 lb.

The bed, among others, of the same breadth was regularly horse-hoed, weeded, &c. The produce,

N^o 1, 1 lb.

2, 1 lb.

3, 1 lb.

4, 1 lb.

The proportions per acre nearly as follows:

N^o 1, Seed, 1 bushel, 1 peck; produce, 3 bushels, 3 pecks.

2, Seed, 2 bushels, 2 pecks; produce, 5 bushels.

3, Seed, 3 bushels, 3 pecks; produce, 2 bushels, 2 pecks.

4, Seed, 5 bushels; produce, 2 bushels, 2 pecks.

The proportions in the calculation are the same with all; consequently the comparison is exact: a minute accuracy is not necessary. I should not have supposed that, with the rows so far asunder, so much seed as N^o 2 would have proved the best.

EXPERIMENT N^o 2.

At the same time marked 6 other perches on an adjoining bed, and sowed them in the same manner:

N^o 1, With 2 oz. or better than 2 pecks per acre.

2, With $\frac{1}{4}$ lb. or 1 bushel and 1 peck ditto.

3, With $\frac{1}{2}$ lb. or 2 bushels and 2 pecks ditto.

4, With $\frac{3}{4}$ lb. or 3 bushels and 3 pecks ditto.

5, With 1 lb. or 5 bushels ditto.

The produce as follows: but I should remark, that N^o 6 was much beaten down by the weather, owing it to its thickness.

N^o 1, $\frac{1}{4}$ lb. or 8 bushels and 3 pecks per acre.

2, $\frac{1}{2}$ lb. or 12 bushels and 2 pecks ditto.

3, 2 lb. or 10 bushels ditto.

4, $\frac{1}{2}$ lb. 7 bushels and 2 pecks ditto.

5, $\frac{1}{4}$ lb. or 3 bushels and 3 pecks ditto.

It is worthy of notice, that 1 bushel and 1 peck, on single rows 4 feet 6 inches wide, should produce above 12 bushels.

EXPERIMENT N^o 3.

In autumn 1763, marked 8 perches in length, on an arched bed ready for sowing, 4 feet 6 inches wide; sowed them as follows:

N^o 1, With $\frac{1}{2}$ oz. or better than $\frac{1}{4}$ peck per acre.

2, With 1 oz. or $\frac{1}{2}$ peck ditto.

3, With $1\frac{1}{2}$ oz. or $\frac{3}{4}$ peck ditto.

4, With 2 oz. or 2 $\frac{1}{2}$ pecks ditto.

5, With $\frac{1}{4}$ lb. or 1 bushel 1 peck ditto.

6, With $\frac{1}{2}$ lb. or 2 bush. and 2 pecks, ditto.

7, With $\frac{1}{4}$ lb. or 3 bush. and 3 pecks, ditto.

8, With 1 lb. or 5 bush. ditto.

N° 8 was beaten down, blighted, and almost destroyed before harvest. Their produce,

N° 1, $\frac{1}{4}$ lb. or 1 bushel and 1 peck.

2, $\frac{1}{2}$ lb. or 3 bushels and 3 pecks.

3, $1\frac{1}{4}$ lb. or 8 bushels and 3 pecks.

4, 2 lb. or 10 bushels.

5, $1\frac{3}{4}$ lb. or 8 bushels and 3 pecks.

6, $1\frac{1}{4}$ lb. or 6 bushels and 1 peck.

7, 1 lb. or 5 bushels.

8, $\frac{1}{4}$ lb. or 1 bushel and 1 peck, very bad.

I should observe, that the gradual rise and fall in these small trials shew, that the conduct and variation of effect were not damaged by being in small.

EXPERIMENT N° 4.

The same autumn marked some perches in length, and sowed them as follows :

N° 1, With $\frac{1}{2}$ oz. or better than $\frac{1}{2}$ a peck *per acre*.

2, With 1 oz. or $1\frac{1}{4}$ peck ditto.

3, With 1 oz. in double rows, 6 inches *asunder*.

4, With $1\frac{1}{2}$ oz. or $1\frac{3}{4}$ peck *per acre*.

5, With ditto in double rows 6 inches.

6, With 2 oz. or $2\frac{1}{2}$ pecks *per acre*.

7, With ditto in double rows 6 inches.

8, With $\frac{1}{4}$ lb. or 1 bushel and 1 peck *per acre*.

9, With ditto in double rows 6 inches.

10, With $\frac{1}{2}$ lb. or 2 bushels and 2 pecks *per acre*.

11, With ditto in double rows 6 inches.

12, With $\frac{3}{4}$ lb. or 3 bushels and 3 pecks *per acre*.

13, With ditto in double rows 6 inches.

These rows carried in general a better appearance than those of the preceding experiments. The produce was as follows :

N° 1, $\frac{1}{4}$ lb. or 1 bushel and 1 peck *per acre*.

2, 14 oz. or 4 bush. $1\frac{1}{2}$ peck ditto.

3, 14 oz. ditto, ditto.

4, $1\frac{1}{4}$ lb. or 8 bush. 3 pecks ditto.

5, 2 lb. or 10 bush. ditto.

6, $2\frac{1}{4}$ lb. or 11 bush. 1 peck ditto.

7, $2\frac{1}{2}$ lb. or 12 bush. 2 pecks ditto.

8, $2\frac{1}{4}$ lb. or 11 bush. 1 peck ditto.

- 9, 2½ lb. or 13 bush. 3 pecks ditto.
- 10, 2 lb. or 10 bush. ditto.
- 11, 2½ lb. or 12 bush. 2 pecks ditto.
- 12, 1½ lb. or 7 bush. 2 pecks ditto.
- 13, 1½ lb. or 8 bush. 3 pecks ditto.

It appears clearly, from this experiment, that a small quantity of seed is as well sown in a single as a double row; but when the seed is increased, the result is different; and this variation, I apprehend, must take place the moment the quantity of seed for a single row is exceeded.

EXPERIMENT N^o 5.

About the same time marked perches in length on another ridge prepared for drilling, and sowed them as follows:

- N^o 1, With ½ oz. or better than 1 a peck per acre.
- 2, With 1 oz. or 1½ peck ditto.
- 3, With 1 oz. in double rows, 6 inches.
- 4, With 1½ oz. or 1¾ peck, ditto.
- 5, With ditto in double rows, 6 inches.
- 6, With ditto in treble rows, 6 inches.
- 7, With 2 oz. or 2½ pecks per acre.
- 8, With ditto in double rows, 6 inches.
- 9, With ditto in treble rows, 6 inches.
- 10, With ¼ lb. or 1 bushel 1 peck per acre.
- 11, With ditto in double rows, 6 inches.
- 12, With ditto in treble rows, 6 inches.
- 13, With ½ lb. or 2 bush. 2 pecks per acre.
- 14, With ditto in double rows, 6 inches.
- 15, With ditto in treble rows, 6 inches.
- 16, With ¾ lb. or 3 bush. 3 pecks per acre.
- 17, With ditto in double rows, 6 inches.
- 18, With ditto in treble rows, 6 inches.

The produce of these several methods was as follows:

- N^o 1, ¼ lb. or 1 bushel and 1 peck per acre.
- 2, 1 lb. or 5 bushels ditto.
- 3, 1 lb. 10 oz. or 5 bushels 1½ peck ditto.
- 4, 1½ lb. or 7 bushels 2 pecks ditto.
- 5, 1½ lb. or 8 bushels 3 pecks ditto.
- 6, 2 lb. or 10 bushels ditto.
- 7, 1½ lb. or 8 bushels 2 pecks ditto.
- 8, 2 lb. 1 oz. or 10 bushels 1½ peck ditto.
- 9, 2 lb. 1 oz. or 10 bushels 1½ peck ditto.
- 10, 3 lb. or 15 bushels ditto.

- N^o 11, 3 $\frac{1}{4}$ lb. or 17 bushels 2 pecks ditto.
 12, 3 $\frac{1}{4}$ lb. or 18 bushels 3 pecks ditto.
 13, 2 $\frac{1}{2}$ lb. or 12 bushels 2 pecks ditto.
 14, 3 lb. or 15 bushels ditto.
 15, 3 $\frac{1}{4}$ lb. or 16 bushels 1 peck ditto.
 16, 1 $\frac{1}{4}$ lb. or 8 bushels 3 pecks ditto.
 17, 2 $\frac{1}{4}$ lb. or 11 bushels 1 peck ditto.
 18, 2 $\frac{1}{2}$ lb. or 12 bushels 2 pecks ditto.

This trial, I apprehend, is an important one; the variations are very numerous, and the result of them as conclusive as any from a single experiment can be: it appears, that three rows are preferable in every quantity of seed to two rows, and two preferable to one. The regularity of this effect is remarkable: it is likewise evident, that 1 bushel and 1 peck *per* acre in these modes of sowing is the most advantageous quantity of seed of those specified in this trial. But there are some variations, in which a less proper quantity in general is more beneficial in 2 or 3 rows than this in one row.

OBSERVATIONS.

In N^o 1, two bushels and an half are the superior quantity of seed. In N^o 2, 1 bushel 1 peck. In N^o 3, 2 $\frac{1}{2}$ pecks. In N^o 4, 1 bushel 1 peck. In N^o 5, the same. This is the general result of these experiments, relative to quantity of seed: as to the number of rows, 3 appear to be better than 2, and 2 better than 1. The superiority of 1 bushel 1 peck is striking; and somewhat conclusive with respect to ridges 4 feet 6 inches broad. We must not however venture to determine the point upon so few trials; but extend and vary them in other years.

EXPERIMENT N^o 6.

In October 1764 marked, in field L*, 10 perches in length, on a ridge, 4 feet 6 inches, ready for drilling, and sowed them as follows:

- N^o 1, With 2 oz. or 2 $\frac{1}{2}$ pecks *per* acre, in one row.
 2, With ditto in double rows, 6 inches.
 3, With $\frac{1}{4}$ lb. or 1 bushel 1 peck *per* acre.
 4, With ditto in double rows, 6 inches.
 5, With ditto in treble rows, 6 inches.
 6, With $\frac{1}{2}$ lb. or 2 bushels 2 pecks *per* acre.
 7, With ditto in double rows, 6 inches.
 8, With ditto in treble rows, 6 inches.
 9, With $\frac{3}{4}$ lb. or 3 bush. 3 pecks *per* acre, in double rows, 6 inches.
 10, With ditto in treble rows, 6 inches.

The produce of these several rows was as follows:

- N^o 1, 2 lb. or 10 bushels *per* acre.
 2, 2 $\frac{1}{2}$ lb. or 12 bushels 2 pecks *per* acre.

- 3, $2\frac{1}{4}$ lb. or 12 bushels 2 pecks *per acre*.
- 4, $2\frac{1}{4}$ lb. or 13 bushels 3 pecks *per acre*.
- 5, $2\frac{1}{4}$ lb. or 13 bushels 3 pecks *per acre*.
- 6, 2 lb. or 10 bushels *per acre*.
- 7, $2\frac{1}{4}$ lb. or 13 bushels 3 pecks *per acre*.
- 8, 3 lb. or 15 bushels *per acre*.
- 9, $2\frac{1}{2}$ lb. or 12 bushels 2 pecks *per acre*.
- 10, $2\frac{1}{4}$ lb. or 13 bushels 3 pecks *per acre*.

Two bushels and two pecks in this trial, sown in treble rows, are the superior quantity: last year one bushel and one peck were better. The difference I attribute to the variation of season, the year 1764 being wet, and 1765 very dry; but further trials will shew how far this is the case.

EXPERIMENT N° 7.

In October 1764, marked 10 perches of a ridge prepared for drilling, in field L*, and sowed them as follows:

- N° 1, With 2 oz. or 2 pecks and $\frac{1}{2}$ *per acre*, one row.
- 2, With ditto in double rows, 6 inches.
- 3, With $\frac{1}{4}$ lb. or 1 bushel 1 peck *per acre*, one row.
- 4, With ditto in double rows, 6 inches.
- 5, With ditto in treble rows, 6 inches.
- 6, With $\frac{1}{2}$ lb. or 2 bushels 2 pecks *per acre*, one row.
- 7, With ditto in double rows, 6 inches.
- 8, With ditto in treble rows, 6 inches.
- 9, With $\frac{3}{4}$ lb. or 3 bushels 3 pecks *per acre*, in double rows 6 inches.
- 10, With ditto in treble rows, 6 inches.

The product of these perches are as follows:

- N° 1, $1\frac{3}{4}$ lb. or 8 bushels 3 pecks *per acre*.
- 2, $2\frac{1}{4}$ lb. or 11 bushels 1 peck *per acre*.
- 3, $2\frac{1}{2}$ lb. or 12 bushels 2 pecks *per acre*.
- 4, $2\frac{1}{2}$ lb. or 12 bushels 2 pecks *per acre*.
- 5, $2\frac{1}{4}$ lb. or 11 bushels 1 peck *per acre*.
- 6, $2\frac{1}{2}$ lb. or 12 bushels 2 pecks *per acre*.
- 7, 3 lb. or 15 bushels *per acre*.
- 8, $3\frac{1}{2}$ lb. or 17 bushels 2 pecks *per acre*.
- 9, 2 lb. or 10 bushels *per acre*.
- 10, $2\frac{1}{4}$ lb. or 12 bushels 2 pecks *per acre*.

In this trial, as in the last, 2 bushels and 2 pecks are much superior to any other quantity; and the treble rows continue to prove more advantageous than either the double or single ones. This similarity of effect renders

renders these experiments very satisfactory; but too much faith must not be placed in them: they must become much more numerous before we can pretend to draw clear deductions from them.

EXPERIMENT N^o 8.

The first week in november 1764, marked 25 square perches of fallow, in field L *, and sowed them in the following manner:

- N^o 1, With $\frac{1}{3}$ of a pint in equally distant rows 1 foot asunder, 2 pecks *per acre*.
- 2, With ditto in equally distant rows 18 inches asunder.
- 3, With ditto in ditto 2 feet asunder.
- 4, With ditto in ditto 2 feet 6 inches.
- 5, With ditto in ditto 3 feet.
- 6, With $\frac{2}{3}$ ths of a pint in equally distant rows 1 foot asunder, 1 bushel *per acre*.
- 7, With ditto in ditto 18 inches.
- 8, With ditto in ditto 2 feet.
- 9, With ditto in ditto 2 feet 6 inches.
- 10, With ditto in ditto 3 feet.
- 11, With $\frac{3}{4}$ of a pint in equally distant rows 1 foot asunder, 1 bushel 2 pecks *per acre*.
- 12, With ditto in ditto 18 inches.
- 13, With ditto in ditto 2 feet.
- 14, With ditto in ditto 2 feet 6 inches.
- 15, With ditto in ditto 3 feet.
- 16, With $\frac{4}{5}$ of a pint in equally distant rows 1 foot asunder, 2 bushels *per acre*.
- 17, With ditto in ditto 18 inches.
- 18, With ditto in ditto 2 feet.
- 19, With ditto in ditto 2 feet 6 inches.
- 20, With ditto in ditto 3 feet.
- 21, With one pint in equally distant rows 1 foot asunder, 2 bushels 2 pecks *per acre*.
- 22, With ditto in ditto 18 inches.
- 23, With ditto in ditto 2 feet.
- 24, With ditto in ditto 2 feet 6 inches.
- 25, With ditto in ditto 3 feet.

They were all perfectly clean by hand-hoeing. The produce as follows:

	P.	Q.	P.	Q.	B.	P.
N ^o 1,	0	1	1½, or, per acre,	1	0	3
2,	0	1	1	0	7	2
3,	0	1	1	0	7	2
4,	0	1	0	0	5	0
5,	0	1	0	0	5	0
6,	0	2	1½	1	5	3
7,	0	2	0	1	2	0
8,	0	2	0	1	2	0
9,	0	2	0	1	2	0
10,	0	1	1	0	7	2
11,	0	4	0	2	4	0
12,	0	3	1	2	1	2
13,	0	3	0	1	7	0
14,	0	2	0	1	2	0
15,	0	1	1½	1	0	3
16,	0	6	0	3	6	0
17,	0	4	1	2	6	2
18,	0	3	1½	2	2	3
19,	0	2	1	1	3	2
20,	0	1	1	0	7	2
21,	0	5	0	3	1	0
22,	0	4	0	2	4	0
23,	0	3	1	2	1	2
24,	0	2	1½	1	5	3
25,	0	2	1	1	3	2

OBSERVATIONS.

This experiment is more decisive than many that occur in husbandry. The variations are very numerous; and yet the irregularities are few. The greatest produce is from two bushels in one foot rows. The next is from two bushels and a half in one foot rows. Thirdly comes two bushels in eighteen inch rows. One bushel and a half in one foot rows, and two and a half in eighteen inch rows, are equal and come next. It is from this scale obvious, that one foot is the best distance with the proper quantity of seed; but it also appears that *distance* is not material; for other distances are more beneficial, when they have the advantage of quantity of seed. The regular superiority of one foot rows (and progressively of the rest in proportion to their nearness) in each quantity is remarkable, and much deserves remembrance. The effect of this trial determines me to form a greater number in future years.

EXPERIMENT N^o 10.

The middle of october 1764, marked, in field M*, twenty-five square perches on a piece of fallow land, and sowed them as follows:

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N^o 1, With

N^o 1, With $\frac{1}{3}$ of a pint equally distant rows one foot: this is 2 pecks *per* acre.

- 2, With ditto in ditto 18 inches.
- 3, With ditto in ditto 2 feet.
- 4, With ditto in ditto 2 feet 6 inches.
- 5, With ditto in ditto 3 feet.
- 6, With $\frac{2}{3}$ of a pint in ditto 1 foot, one bushel *per* acre.
- 7, With ditto in ditto 18 inches.
- 8, With ditto in ditto 2 feet.
- 9, With ditto in ditto 2 feet 6 inches.
- 10, With ditto in ditto 3 feet.
- 11, With $\frac{3}{4}$ of a pint in ditto 1 foot, 1 bushel 2 pecks *per* acre.
- 12, With ditto in ditto 18 inches.
- 13, With ditto in ditto 2 feet.
- 14, With ditto in ditto 2 feet 6 inches.
- 15, With ditto in ditto 3 feet.
- 16, With $\frac{4}{5}$ of a pint in ditto 1 foot, 2 bushels.
- 17, With ditto in ditto 18 inches.
- 18, With ditto in ditto 2 feet.
- 19, With ditto in ditto 2 feet 6 inches.
- 20, With ditto in ditto 3 feet.
- 21, With 1 pint in ditto 1 foot, 2 bushels, 2 pecks.
- 22, With ditto in ditto 18 inches.
- 23, With ditto in ditto 2 feet.
- 24, With ditto in ditto 2 feet 6 inches.
- 25, With ditto in ditto 3 feet.

They were kept clean by hand-hoeing, which operation was always performed on the same day to all. The produce,

	P.	Q.	P.		Q.	B.	P.
N ^o 1,	0	1	1	or, <i>per</i> acre,	0	7	2
2,	0	1	1		0	7	2
3,	0	1	0		0	5	0
4,	0	1	0		0	5	0
5,	0	0	1 $\frac{1}{2}$		0	3	3
6,	0	2	0		1	2	0
7,	0	1	1 $\frac{1}{2}$		1	0	3
8,	0	1	1		0	7	2
9,	0	1	0 $\frac{1}{2}$		0	6	1
10,	0	1	0		0	5	0
11,	0	3	1 $\frac{1}{2}$		2	2	3
12,	0	3	0		1	7	0
13,	0	2	1		1	3	2

	P.	Q.	P.	Q.	B.	P.
14,	0	2	$0\frac{1}{2}$	1	3	1
15,	0	2	0	1	2	0
16,	0	5	1	3	3	2
17,	0	4	$0\frac{1}{2}$	2	5	1
18,	0	3	1	2	1	2
19,	0	2	$0\frac{1}{2}$	1	3	1
20,	0	1	$0\frac{1}{2}$	0	6	1
21,	0	4	$0\frac{1}{2}$	2	5	1
22,	0	3	1	2	1	2
23,	0	2	$1\frac{1}{2}$	1	5	3
24,	0	1	$1\frac{1}{2}$	1	0	3
25,	0	1	$1\frac{1}{2}$	1	0	3

OBSERVATIONS.

Notwithstanding several variations in this experiment from the preceding one, and also from regular progressive quantities, yet it in general agrees very much with the result of the former trial, and consequently it much confirms it; for the same effects appearing in different fields, of very different soils, give no slight reason to suppose them conclusive. Two bushels in equally distant rows, one foot asunder, are superior to any quantity or distance; and the general effect of each quantity clearly prove, that the more rows, the better the crop.

EXPERIMENT N° II.

The last week in september 1764, marked, in field M*, 30 square perches of fallowed land, and drilled them in the following manner:

N° 1, With $\frac{1}{3}$ of a pint, equally distant rows 6 inches asunder. This is 2 pecks *per* acre.

- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 18 inches.
- 4, With ditto in ditto 2 feet.
- 5, With ditto in ditto 2 feet 6 inches.
- 6, With ditto in ditto 3 feet.
- 7, With $\frac{2}{3}$ of a pint in ditto 6 inches, 1 bushel *per* acre.
- 8, With ditto in ditto 1 foot.
- 9, With ditto in ditto 18 inches.
- 10, With ditto in ditto 2 feet.
- 11, With ditto in ditto 2 feet 6 inches.
- 12, With ditto in ditto 3 feet.
- 13, With $\frac{3}{4}$ of a pint in ditto 6 inches, 1 bushel 2 pecks.
- 14, With ditto in ditto 1 foot.
- 15, With ditto in ditto 18 inches.

[N n 2]

16, With

- 16, With ditto in ditto 2 feet.
- 17, With ditto in ditto 2 feet 6 inches.
- 18, With ditto in ditto 3 feet.
- 19, With $\frac{4}{5}$ of a pint in ditto 6 inches, 2 bushels.
- 20, With ditto in ditto 1 foot.
- 21, With ditto in ditto 18 inches.
- 22, With ditto in ditto 2 feet.
- 23, With ditto in ditto, 2 feet 6 inches.
- 24, With ditto in ditto 3 feet.
- 25, With 1 pint in ditto 6 inches, 2 bushels 2 pecks.
- 26, With ditto in ditto 1 foot.
- 27, With ditto in ditto 18 inches.
- 28, With ditto in ditto 2 feet.
- 29, With ditto in ditto 2 feet 6 inches.
- 30, With ditto in ditto 3 feet.

They were all hand-hoed equally. The produce,

N ^o	P.	Q.	P.	or, per acre,	Q.	B.	P.
1,	0	1	1		0	7	2
2,	0	1	1		0	7	2
3,	0	1	1		0	7	2
4,	0	0	$1\frac{1}{2}$		0	3	3
5,	0	0	$1\frac{1}{2}$		0	3	3
6,	0	0	$1\frac{1}{4}$		0	3	0
7,	0	2	$0\frac{1}{2}$		1	3	1
8,	0	2	0		1	2	0
9,	0	1	$1\frac{1}{2}$		1	0	3
10,	0	1	1		0	7	2
11,	0	1	1		0	7	2
12,	0	1	$0\frac{1}{2}$		0	6	1
13,	0	3	0		1	7	0
14,	0	3	$1\frac{1}{2}$		2	2	3
15,	0	3	0		1	7	0
16,	0	2	1		1	3	2
17,	0	2	$0\frac{1}{2}$		1	3	0
18,	0	2	0		1	2	0
19,	0	4	$1\frac{1}{2}$		2	7	0
20,	0	5	$1\frac{1}{2}$		3	4	3
21,	0	4	0		2	4	0
22,	0	3	1		2	1	2
23,	0	2	1		1	3	2
24,	0	2	1		1	3	2
25,	0	3	1		2	1	2
26,	0	4	0		2	4	0

	P.	Q.	P.	Q.	B.	P.
N ^o 27,	0	3	0 $\frac{1}{2}$	2	0	0
28,	0	3	0	1	7	0
29,	0	2	0	1	2	0
30,	0	1	1	0	7	2

OBSERVATIONS.

This experiment is, in one respect, particularly satisfactory: the preceding ones had universally proved, that, to so small a distance as one foot, the more the rows, the greater the crop; but as less than twelve inches was not tried, it was by no means clear, that even a less distance might not be superior. In the trial before us, this point is decided, as far as one experiment can. We find six inches in every quantity inferior to one foot; consequently we may determine, that, in drilling in equally distant rows, one foot is, of all the distances hitherto tried, the most beneficial.

Respecting the quantity of seed, the result of this trial, in general, confirms the preceding ones. Two bushels are superior to any other portion. There are a few contradictions to reasoning in some of the articles; that is, the effect is various from what might be expected; but such will ever be found in all husbandry experiments.

EXPERIMENT N^o 12.

The first week in october 1765, marked 30 square perches of fallowed land, in field L*, and drilled them in the following manner:

N^o 1, With $\frac{1}{5}$ of a pint in equally distant rows 6 inches asunder. This is 2 pecks *per* acre.

- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 18 inches.
- 4, With ditto in ditto 2 feet.
- 5, With ditto in ditto 2 feet 6 inches.
- 6, With ditto in ditto 3 feet.
- 7, With $\frac{2}{5}$ of a pint in ditto 6 inches, 1 bushel *per* acre.
- 8, With ditto in ditto 1 foot.
- 9, With ditto in ditto 18 inches.
- 10, With ditto in ditto 2 feet.
- 11, With ditto in ditto 2 feet 6 inches.
- 12, With ditto in ditto 3 feet.
- 13, With $\frac{3}{5}$ of a pint in ditto 6 inches, 1 bushel 2 pecks *per* acre.
- 14, With ditto in ditto 1 foot.
- 15, With ditto in ditto 18 inches.
- 16, With ditto in ditto 2 feet.
- 17, With ditto in ditto 2 feet 6 inches.
- 18, With ditto in ditto 3 feet.
- 19, With $\frac{4}{5}$ of a pint in ditto 6 inches, 2 bushels *per* acre.

- 20, With ditto in ditto 1 foot.
 21, With ditto in ditto 18 inches.
 22, With ditto in ditto 2 feet.
 23, With ditto in ditto 2 feet 6 inches.
 24, With ditto in ditto 3 feet.
 25, With 1 pint in ditto 6 inches, 2 bushels 2 pecks *per* acre.
 26, With ditto in ditto 1 foot.
 27, With ditto in ditto 18 inches.
 28, With ditto in ditto 2 feet.
 29, With ditto in ditto 2 feet 6 inches.
 30, With ditto in ditto 3 feet.

They were all equally hand-hoed. The product as follows:

	P.	Q.	P.		Q.	B.	P.
N ^o 1,	0	1	0	or, <i>per</i> acre,	0	5	0
2,	0	1	1½		1	0	3
3,	0	1	1		0	7	2
4,	0	1	0½		0	6	1
5,	0	1	0		0	5	0
6,	0	1	0		0	5	0
7,	0	2	1		1	4	2
8,	0	3	0		1	7	0
9,	0	2	1		1	4	2
10,	0	2	0		1	2	0
11,	0	1	1½		1	0	3
12,	0	1	1		0	7	2
13,	0	3	1½		2	2	3
14,	0	4	0		2	4	0
15,	0	3	0		1	7	0
16,	0	2	1½		1	5	3
17,	0	1	1½		1	0	3
18,	0	1	1½		1	0	3
19,	0	5	0		3	1	0
20,	0	6	0½		3	7	1
21,	0	5	0½		3	2	1
22,	0	4	1		2	6	2
23,	0	3	0½		2	0	1
24,	0	2	0		1	2	0
25,	0	5	0½		3	2	1
26,	0	5	1½		3	4	3
27,	0	4	0		2	4	0
28,	0	3	0½		2	0	1
29,	0	2	0		1	2	0
30,	0	1	1		0	7	2

OBSERVATIONS.

This season was a very different one from the last; consequently we are not to wonder at some variations from the effects of former trials. But 2 bushels *per* acre, in close rows, maintain the superiority; $2\frac{1}{2}$ come nearer (and in one instance exceed) two, than in preceding trials: there are several other variations, which cannot be accounted for; but, throughout most of the steps of the experiments, the more the rows, the greater the produce.

EXPERIMENT N° 13.

In october 1765, marked, in field L*, 10 perches in length, of a ridge 4 feet 6 inches broad, prepared for drilling; and sowed them as under:

- N° 1, With 2 oz. or $2\frac{1}{2}$ pecks *per* acre, in one row.
- 2, With ditto in double rows 6 inches.
- 3, With $\frac{1}{4}$ lb. or 1 bushel 1 peck *per* acre, one row.
- 4, With ditto in double rows 6 inches.
- 5, With ditto in treble rows 6 inches.
- 6, With $\frac{1}{2}$ lb. or 2 bushels 2 pecks *per* acre, one row.
- 7, With ditto in double rows 6 inches.
- 8, With ditto in treble rows 6 inches.
- 9, With $\frac{3}{4}$ lb. or 3 bushels 3 pecks *per* acre in double rows 6 inches.
- 10, With ditto in treble rows 6 inches.

The management, in weeding, horse-hoeing, &c. the same, only the double and treble rows hand-hoed. The product,

- N° 1, $1\frac{1}{2}$ lb. or 7 bushels 2 pecks *per* acre.
- 2, 2 lb. or 10 bushels *per* acre.
- 3, $2\frac{1}{2}$ lb. or 12 bushels 2 pecks *per* acre.
- 4, $2\frac{1}{4}$ lb. or 11 bushels 1 peck *per* acre.
- 5, $2\frac{1}{2}$ lb. or 12 bushels 2 pecks *per* acre.
- 6, $2\frac{1}{2}$ lb. or ditto.
- 7, $2\frac{3}{4}$ lb. or 13 bushels 3 pecks *per* acre.
- 8, 3 lb. or 15 bushels *per* acre.
- 9, 2 lb. or 10 bushels *per* acre.
- 10, $2\frac{1}{4}$ lb. or 11 bushels 1 peck *per* acre.

The superiority of two bushels and two pecks in treble rows is more than I should have expected from such a quantity of seed. And one bushel one peck in one row producing as much as in three, is totally incomprehensible: but such contradictions will happen in experiments, without arising from accidents. There are other circumstances contrary to the general effect, which it is needless to point out.

EXPERIMENT N° 14.

In october 1765, marked, in field M*, ten perches in length of a ridge, four feet six inches broad, prepared for drilling, and sowed them in the following manner :

- N° 1, With 2 oz. or 2 pecks and $\frac{1}{2}$ *per* acre, in one row.
- 2, With ditto in double rows 6 inches.
- 3, With $\frac{1}{4}$ lb. or 1 bushel 1 peck *per* acre, one row.
- 4, With ditto in double rows 6 inches.
- 5, With ditto in treble rows 6 inches.
- 6, With $\frac{1}{2}$ lb. or 2 bushels 2 pecks *per* acre, one row.
- 7, With ditto in double rows 6 inches.
- 8, With ditto in treble rows 6 inches.
- 9, With $\frac{3}{4}$ lb. or 3 bushels 3 pecks *per* acre, in double rows 6 inches.
- 10, With ditto in treble rows 6 inches.

The management, as in the other trials, perfectly equal. The product as follows :

- N° 1, 1 $\frac{1}{2}$ lb. or 7 bushels 2 pecks *per* acre.
- 2, 2 lb. or 10 bushels *per* acre.
- 3, 2 $\frac{1}{2}$ lb. or 12 bushels 2 pecks *per* acre.
- 4, 2 $\frac{3}{4}$ lb. or 11 bushels 1 peck *per* acre.
- 5, 2 lb. or 10 bushels *per* acre.
- 6, 2 lb. or 10 bushels *per* acre.
- 7, 2 $\frac{1}{2}$ lb. or 12 bushels *per* acre.
- 8, 3 lb. or 15 bushels *per* acre.
- 9, 2 lb. or 10 bushels *per* acre.
- 10, 2 $\frac{3}{4}$ lb. or 11 bushels 1 peck *per* acre.

The effect of this experiment towards deciding the proper quantity in drilling is more regular, and nearer the principles of the preceding ones, than the last. Two bushels and two pecks are superior to half that quantity. Future trials may determine the comparison more minutely with other quantities.

EXPERIMENT N° 15.

In october 1765, marked, in field M*, 28 square perches of land for drilling with wheat; they were not absolutely contiguous, but nearly so, and the soil absolutely the same. The modes of sowing as follows :

- N° 1, With $\frac{2}{3}$ of a pint in equally distant rows 6 inches asunder. This is 1 bushel *per* acre.
- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 2 feet.
- 4, With $\frac{3}{4}$ of a pint in equally distant rows 6 inches asunder.
- 5, With ditto in ditto 1 foot.

- N^o 6, With ditto in ditto 2 feet.
 7, With ditto in double rows 1 foot, with 3 feet intervals.
 8, With ditto in ditto, 4 feet intervals.
 9, With $\frac{4}{5}$ of a pint in single rows 6 inches.
 10, With ditto in ditto 1 foot.
 11, With ditto in ditto 2 feet.
 12, With ditto in double rows 1 foot, with 3 feet intervals.
 13, With ditto in double rows 1 foot, with 4 feet intervals.
 14, With 1 pint in single rows 6 inches.
 15, With ditto in ditto 1 foot.
 16, With ditto in ditto 2 feet.
 17, With ditto in double rows 1 foot, with 3 feet intervals.
 18, With ditto in ditto, with 4 feet intervals.
 19, With $1\frac{1}{3}$ of a pint in single rows 6 inches.
 20, With ditto in ditto 1 foot.
 21, With ditto in ditto 2 feet.
 22, With ditto in double rows 1 foot, with 3 feet intervals.
 23, With ditto in ditto, with 4 feet intervals.
 24, With $1\frac{2}{3}$ of a pint in single rows 6 inches.
 25, With ditto in ditto 1 foot.
 26, With ditto in ditto 2 feet.
 27, With ditto in double rows 1 foot, with 3 feet intervals.
 28, With ditto in ditto, with 4 feet intervals.

All which rows above one foot were horse-hoed, and the rest with the spaces between double ones hand-hoed; and every operation performed on the same day. The product as follows:

	P.	Q.	P.		Q.	B.	P.
N ^o 1,	0	2	0	or, per acre,	1	2	0
2,	0	2	$1\frac{1}{2}$		1	5	3
3,	0	1	$1\frac{1}{2}$		1	0	3
4,	0	3	$1\frac{1}{2}$		2	3	3
5,	0	4	0		2	4	0
6,	0	3	0		1	7	0
7,	0	3	1		2	1	2
8,	0	3	$0\frac{1}{2}$		2	0	1
9,	0	5	0		3	1	0
10,	0	5	1		3	3	2
11,	0	4	$1\frac{1}{2}$		2	7	3
12,	0	4	0		2	4	0
13,	0	3	$1\frac{1}{2}$		2	3	3
14,	0	5	1		3	3	2
15,	0	6	0		3	6	0
16,	0	4	0		2	4	0
17,	0	4	1		2	6	2

[0 0]

N ^o	P.	Q.	P.	Q.	B.	P.
18,	o	4	o	2	4	o
19,	o	4	1½	2	7	3
20,	o	4	1½	2	7	3
21,	o	3	1	2	1	2
22,	o	3	o	1	7	o
23,	o	3	o	1	7	o
24,	o	4	o	2	4	o
25,	o	4	1	2	6	2
26,	o	3	1	2	1	2
27,	o	3	1½	2	3	3
28,	o	3	1	2	1	2

OBSERVATIONS.

Two bushels and an half in equally distant rows, one foot asunder, appears to be the most advantageous quantity of all these. Next to this come two bushels in equally distant rows of one foot, and two and a half at six inches, which are equal. This surprizes me a little; I should have conceived that two bushels at one foot would have been much superior to two and a half at six inches; but in this trial the contrary is manifest. Upon the whole, the equally distant rows at one foot are superior; and next those of six inches: among the rest, the success is various; the horse-hoeing three feet intervals has no great superiority, if any, to equally distant rows at two feet. Indeed they appear to be nearly equal; four feet intervals inferior to three feet ones.

EXPERIMENT N^o 16.

In october 1765, marked, in field L*, 23 square perches of land, drilling with wheat, nearly contiguous; the soil perfectly similar. They were sowed in the following manner:

- N^o 1, With $\frac{2}{3}$ of a pint in equally distant rows 6 inches asunder. This is 1 bushel *per* acre.
- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 18 inches.
- 4, With $\frac{3}{4}$ of a pint in ditto 6 inches, 1 bushel 2 pecks *per* acre.
- 5, With ditto in ditto 1 foot.
- 6, With ditto in ditto 18 inches.
- 7, With ditto in double rows 1 foot, with 3 feet intervals.
- 8, With ditto in treble rows 6 inches, with three feet intervals.
- 9, With $\frac{1}{2}$ of a pint in equally distant rows 6 inches, 2 bushels.
- 10, With ditto in ditto 1 foot.
- 11, With ditto in ditto 18 inches.
- 12, With ditto in double rows 1 foot, with 3 feet intervals.
- 13, With ditto in treble rows 6 inches, with 3 feet intervals.

N^o 14, With 1 pint in equally distant rows 6 inches, 2 bushels 2 pecks.

15, With ditto in ditto 1 foot.

16, With ditto in ditto 18 inches.

17, With ditto in double rows 1 foot, with 3 feet intervals.

18, With ditto in treble rows 6 inches, with 2 feet intervals.

19, With 1 $\frac{1}{2}$ pint in equally distant rows 6 inches, 3 bushels.

20, With ditto in ditto 1 foot.

21, With ditto in ditto 18 inches.

22, With ditto in double rows 1 foot, with 3 feet.

23, With ditto in treble rows 6 inches, with 3 feet intervals.

The culture was equally bestowed on all, according to their distances, both horse and hand-hoeing. The produce,

	P.	Q.	P.		Q.	B.	P.
N ^o 1,	0	3	1 $\frac{1}{2}$	or, per acre,	2	2	3
2,	0	4	0		2	4	0
3,	0	2	1		1	4	2
4,	0	4	1		2	6	2
5,	0	4	1 $\frac{1}{2}$		2	7	3
6,	0	3	0		1	7	0
7,	0	2	0		1	2	0
8,	0	2	1		1	4	2
9,	0	5	0		3	1	0
10,	0	6	0		3	6	0
11,	0	4	1 $\frac{1}{2}$		2	7	3
12,	0	3	0		1	7	0
13,	0	3	1		2	1	2
14,	0	5	0		3	1	0
15,	0	5	1		3	3	2
16,	0	4	0		2	4	0
17,	0	4	0		2	4	0
18,	0	4	1		2	6	2
19,	0	4	1		2	6	2
20,	0	4	1 $\frac{1}{2}$		2	7	3
21,	0	3	1		2	1	2
22,	0	2	1 $\frac{1}{2}$		1	4	3
23,	0	3	0		1	7	0

OBSERVATIONS.

The result of this experiment is very satisfactory; for the products are uncommonly regular, in proportion to the advantageousness of the quantity of seed. Two bushels *per* acre, in equally distant rows one foot asunder, have the superiority over all the rest. Two bushels and two pecks at the same distance come next. This is a strong proof, that one foot is the proper standard for equally distant rows; as two and a half bushels, so drilled,

led, exceeds two when sown at any other distance. The superiority of one foot is regular through every quantity of seed; and next come six inches, equally distant at eighteen; and the horse-hoeing ones are not far from a par. It is farther observable, that, in general, more seed is found beneficial than has been recommended by most writers on the drill-husbandry.

EXPERIMENT N° 17.

The last week in october 1766, marked ten perches in length, of a ridge, in field L*, four feet six inches broad, prepared for drilling, and sowed them in the following manner:

- N° 1, With 2 oz. or 2 pecks and $\frac{1}{2}$ per acre, in one row.
- 2, With ditto in double rows 6 inches.
- 3, With $\frac{1}{4}$ lb. or 1 bushel 1 peck per acre, one row.
- 4, With ditto in double rows 6 inches.
- 5, With ditto in treble rows 6 inches.
- 6, With $\frac{1}{2}$ lb. or 2 bushels 2 pecks per acre, 1 row.
- 7, With ditto in double rows 6 inches.
- 8, With ditto in treble rows 6 inches.
- 9, With $\frac{3}{4}$ lb. or 3 bushels 3 pecks per acre, in double rows 6 inches.
- 10, With ditto in treble rows 6 inches.

The weeding and horse-hoeing the same, and the hand-hoeing to the double and treble rows. The produce,

- N° 1, 1 lb $\frac{1}{4}$ lb. or 6 bushels 1 peck per acre.
- 2, 2 lb. or 10 bushels per acre.
- 3, 1 $\frac{1}{2}$ lb. or 7 bushels and 2 pecks per acre.
- 4, 2 $\frac{1}{4}$ lb. or 11 bushels 1 peck per acre.
- 5, 2 $\frac{3}{4}$ lb. or 13 bushels 3 pecks per acre.
- 6, 2 $\frac{1}{2}$ lb. or 11 bushels 1 peck per acre.
- 7, 3 lb. or 15 bushels per acre.
- 8, 3 lb. or ditto.
- 9, 2 lb. or 10 bushels per acre.
- 10, 2 $\frac{1}{4}$ lb. or 11 bushels 1 peck per acre.

Two bushels and a half in this trial are much superior to the other quantities: and the more the rows (in general) the greater the crop. One bushel or one peck in treble rows, the next best. There are some variations, however, which are not consonant with the general effect.

EXPERIMENT N° 18.

In october 1766, marked, in field L*, twenty-eight square perches of land, drilling with wheat, and sowed them as follows:

- N° 1, With $\frac{2}{3}$ of a pint in equal distant rows 6 inches asunder: this is 1 bushel per acre.
- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 2 feet.

- N^o 1, With $\frac{1}{2}$ of a pint in equally distant rows 6 inches asunder, 1 bushel 2 pecks per acre.
- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 2 feet.
- 4, With ditto in double rows 1 foot, with 3 feet intervals.
- 5, With ditto in ditto, 4 feet intervals.
- 6, With $\frac{1}{3}$ of a pint in single rows 6 inches, 2 bushels per acre.
- 7, With ditto in ditto 1 foot.
- 8, With ditto in ditto 2 feet.
- 9, With ditto in double rows 1 foot, with 3 feet intervals.
- 10, With ditto in ditto, 4 feet intervals.
- 11, With 1 pint in single rows 6 inches, 2 bushels 2 pecks.
- 12, With ditto in ditto 1 foot.
- 13, With ditto in ditto 2 feet.
- 14, With ditto in double rows 1 foot, with 3 feet intervals.
- 15, With ditto in ditto, 4 feet intervals.
- 16, With $\frac{1}{4}$ of a pint in single rows 6 inches, 3 bushels.
- 17, With ditto in ditto 1 foot.
- 18, With ditto in ditto 2 feet.
- 19, With ditto in double rows 1 foot, 3 feet intervals.
- 20, With ditto in ditto 4 feet intervals.
- 21, With $\frac{1}{5}$ of a pint in single rows 6 inches, 3 bushels 2 pecks.
- 22, With ditto in ditto 1 foot.
- 23, With ditto in ditto 2 feet.
- 24, With ditto in double rows 1 foot, 3 feet intervals.
- 25, With ditto in ditto 4 feet intervals.
- 26, With $\frac{1}{6}$ of a pint in single rows 6 inches, 3 bushels 2 pecks.
- 27, With ditto in ditto 1 foot.
- 28, With ditto in ditto 2 feet.
- 29, With ditto in double rows 1 foot, 3 feet intervals.
- 30, With ditto in ditto 4 feet intervals.

The operations of weeding, hand and horse-hoeing, according to distances, were all performed the same days. The product as follows :

	P.	Q.	P.		Q.	B.	P.
N ^o 1,	0	2	0 $\frac{1}{2}$	or, per acre,	1	3	1
2,	0	2	1 $\frac{1}{2}$		1	5	3
3,	0	1	1		0	7	2
4,	0	3	1		2	1	2
5,	0	4	0 $\frac{1}{2}$		2	5	1
6,	0	2	1 $\frac{1}{2}$		1	5	3
7,	0	2	1		1	4	2
8,	0	2	0 $\frac{1}{2}$		1	3	1
9,	0	5	1		3	3	2
10,	0	6	0		3	6	0
11,	0	4	0 $\frac{1}{2}$		2	5	1
12,	0	3	1		2	1	2
13,	0	3	0		1	7	0
14,	0	5	0		3	1	0
15,	0	5	1		3	3	2

N^o 16,

No.	P.	Q.	P.	Q.	B.	P.
16,	0	4	0	or, per acre,	2	4
17,	0	4	0		2	4
18,	0	4	0		2	4
19,	0	4	1		2	6
20,	0	4	1 1/2		2	7
21,	0	3	1		2	1
22,	0	2	1 1/2		1	5
23,	0	2	1		1	4
24,	0	4	0		2	4
25,	0	4	0		2	4
26,	0	3	1		2	1
27,	0	3	0		1	7
28,	0	3	0		1	7

OBSERVATIONS.

This trial yields a result very consonant with several of the same kind in former years. Two bushels, in equally distant rows one foot asunder, appear to be the most advantageous quantity and distance. Single rows at one foot yield the greatest product in every variation of quantity. The same at six inches come next; and the rest vary much: but no great superiority in any.

EXPERIMENT N^o 19.

In october 1766, marked, in field M*, 18 perches of land, drilling with wheat, and sowed them in the following manner:

- N^o 1, With $\frac{2}{3}$ of a pint in equally distant rows 6 inches asunder, 1 bushel *per acre*.
- 2, With ditto in ditto 1 foot.
- 3, With ditto in ditto 18 inches.
- 4, With $\frac{3}{5}$ of a pint in ditto 6 inches, 1 bushel 2 pecks *per acre*.
- 5, With ditto in ditto 1 foot.
- 6, With ditto in ditto 18 inches.
- 7, With ditto in double rows 6 inches, with 3 feet intervals.
- 8, With ditto in treble rows 6 inches, 3 feet intervals.
- 9, With $\frac{4}{5}$ of a pint in equally distant rows, 6 inches 2 bushels *per acre*.
- 10, With ditto in ditto 1 foot.
- 11, With ditto in ditto 18 inches.
- 12, With ditto in double rows 6 inches, 3 feet intervals.
- 13, With ditto in treble rows 6 inches, 3 feet intervals.
- 14, With 1 pint in equally distant rows 6 inches, 2 bushels 2 pecks *per acre*.
- 15, With ditto in ditto 1 foot.
- 16, With ditto in ditto 18 inches.
- 17, With ditto in double rows 6 inches, 3 feet intervals.
- 18, With ditto in treble rows 6 inches, 3 feet intervals.

The

The management was equal to all, as far as the respective operations of horse and hand-hoeing would allow. The produce as follows:

N ^o	P.	Q.	P.	or, per acre,	Q.	B.	P.
1,	0	2	0		0	1	2
2,	0	2	1½		1	5	3
3,	0	2	0		1	2	0
4,	0	4	0		2	4	0
5,	0	5	1		3	3	2
6,	0	4	1		2	6	2
7,	0	3	1		2	1	2
8,	0	3	1½		2	2	3
9,	0	5	0		3	1	0
10,	0	7	0		4	3	0
11,	0	5	0		3	1	0
12,	0	4	1		2	6	2
13,	0	4	1½		2	7	3
14,	0	5	0		3	1	0
15,	0	6	0		3	6	0
16,	0	4	1		2	6	2
17,	0	4	1		2	6	2
18,	0	4	1½		2	7	3

OBSERVATIONS..

Two bushels *per* acre are, in this trial, the superior quantity; and one foot, equally distant, much beyond any other mode of sowing. This is proved, by two bushels two pecks in the same rows being the next beneficial quantity. As to the other portions of seed, and distance of rows, it is in general to be remembered, that the larger quantities of seed are better than the smaller; and the more numerous the rows, the better the crop.

GENERAL OBSERVATIONS..

Some circumstances of no slight importance are proved by these trials. The quantity of seed seems to vary between two bushels and two and an half: it is not clear which is most advantageous; and in several of the experiments one bushel and a peck carried the superiority: but I believe two bushels proved best oftener than the rest. As to the rows, the equally distant ones, either at one foot or six inches, much exceed all the other modes of sowing. I believe eighteen inches comes next, and before any of the horse-hoed ones. This is remarkable; and should seem to prove, that wide spaces, notwithstanding the benefit of horse-culture, are disadvantageous in proportion to their breadth. Certain it is, that the three feet intervals, in every experiment, beat the four feet ones.

But

But one foot, equally distant, is much superior to any of the rest: and herein these experiments confirm former ones that I have made in large; for I have never been able to carry the product of horse-hoed crops to an equality with such equally distant drilled ones. But the reader, doubtless, does not forget, that, after such, the land stands in need of a fallow, though not so much as after broad-cast crops; whereas, after horse-hoed ones, it is ready prepared for any fresh product; an advantage that should always be kept in mind, when we treat of comparisons of this nature.

As to the other portion of the land, which was sown with the same seed, and in the same manner, but with the same distance between the rows, as the first, and with the same quantity of seed, the result was, that the product was not so great as in the first, and that the land was not so ready prepared for any fresh product, as in the first. This is a disadvantage, which should be kept in mind, when we treat of comparisons of this nature.

SECT,

S E C T. V.

Of the TIME of SOWING.

I HAD scarce formed an idea of conducting a course of experiments, before I was convinced of the importance of particularly attending to this circumstance. I soon remarked many variations in the seasons my neighbours chose for sowing: some were reckoned early sowers; others late ones. The little experience I had of my own, and the observations I made in reading, all proved a great diversity in the practice, and oftentimes without any diversity in the soil that should seem to justify such variations. I have since had greater opportunities of remarking various courses of husbandry; and find, that the difference of the time of sowing the same grain is very great, in different counties: wheat is sown from july to march, a compass of time that is prodigious.

In many parts of England, it is very common to see reaping in one field, and sowing in another adjoining. On the contrary, spring wheats are not uncommon in other parts of the kingdom: and, in numerous tracts of country, they continue sowing all winter, whenever the weather will permit. Now, these variations, I am very clear, from particular observation, are not calculated to answer the purposes of peculiar soils; but arise either from chance,---local prejudices,-- or some other causes, not apparent: nor is any thing more common than to find deviations from the general conduct, attended with very great success.

To reason upon matters of this sort, I have generally found very fallacious. My opinion originally was, that early sowing must, in general, be pernicious; by allowing the weeds to rise strong before winter: and, on this account, as well as from copying the common practice of my neighbours, I sowed frequently late: but it was not long before I was fully convinced, that the only method of gaining real experience was, by trying experiments upon every point; and accordingly this, as well as most others, was submitted to that only test.

I should previously remark, that all these trials are *in small*; I need not repeat, that I think such (in objects of comparison) are alone to be depended on.

It should also be observed, that they are all in drills, as I apprehended the point of comparison to be equally fair between rows of corn as broad-cast spots: but every article is the same through each trial, respecting culture, &c. except one variation, which was the continuation of the preparation for the corn, in late sowings: that is, the fallow was continued after the first, second, &c. sowings, for those that were to succeed; but in no other degree than would have been common in a field at large. If, for instance, I sow five acres, part of twenty, in september, and leave the rest, either through choice or necessity, till november, it does not follow that the part so left should receive no more ploughings than the other; for that would be to contradict all idea of common propriety: if the soil wants more tillage, from being left unsown, it has it; if it does not want it, it of course is not given: but this concerns only long periods. When the sowings are pretty near each other, there is consequently no variation of tillage: but, whenever there should be extra-tillage, &c. for particular times of sowing, it is minuted, that an idea may be had of the variation of expence.

EXPERIMENT N^o 1.

In autumn 1764, marked several drills, each a perch long, on a piece of fallow in field L*, that had been ploughed four times; and sowed each with 1 oz. of wheat, as follows:

N^o 1. September 15.

2. - - 21.

3. - - 29.

4. October 6.

5. - - 12.

6. - - 18.

7. - - 30.

Ploughed once more, and then went on.

8. November 5.

9. - - 15.

The drills were all 2 feet asunder. They were all hand-hoed at the same times. The produce,

N^o 1. - - 8 ounces.

2. - - 7 $\frac{1}{4}$

3. - - 7 $\frac{1}{2}$

4. - - 6

5. - - 6

6. - - 5 $\frac{1}{2}$

7. - - 5

N^o 8. 2 - 13 - 14 1/2 ounces.

9. 2 - 4 1/2 -

I should remark, that 8 ounces are about 1/2 bushels *per* acre; which will be a sufficient key to the reader, without multiplying tables of proportion. It appears from this experiment, that the earlier in September wheat is sown, the better; the difference between the first and the last sown is very great; more than I should have apprehended.

EXPERIMENT N^o 2.

Marked some drills, each a perch long, in field L*, on a fallowed piece, at different times, in autumn 1764, and sowed them with 1 oz. each of wheat.

N^o 1. September 12.

2. - - 19.

3. - - 24.

4. - - 29.

5. October 3.

Ploughed it again, and then went on.

6. - - 11.

7. - - 19.

8. - - 30.

Hand-hoed them as before. I might remark, that all my experiments on this head were in two-foot drills. The produce,

N^o 1. - - 8 ounces.

2. - - 8

3. - - 7 1/4

4. - - 7 1/4

5. - - 7 1/2

6. - - 7 1/2

7. - - 7 1/2

8. - - 7 1/2

This trial was too limited to be absolutely conclusive: nor is the variation of product great enough to allow of any deductions. An additional ploughing appears to have been of much service, if an early season is important.

EXPERIMENT N^o 3.

In autumn 1764, marked perches of fallow in M*, and sowed them with an ounce each, as follows :

[P p 2]

N^o 1.

N^o 1. September 3 7

2. - - 12

3. - - 19

4. October 3

Then a ploughing.

5. - - 19

6. - - 30

Another ploughing.

7. November 5

8. - - 17

Management the same. The produce,

N^o 1. - - 7 $\frac{1}{4}$ ounces.

2. - - 7 $\frac{1}{4}$

3. - - 7 $\frac{1}{2}$

4. - - 6 $\frac{1}{4}$

5. - - 7 $\frac{1}{2}$

6. - - 7 $\frac{1}{4}$

7. - - 7 $\frac{1}{2}$

8. - - 6

The variations in this result are not great: the time between N^o 1 and N^o 7 is two months, and yet the product is the same. One would suppose from hence, that late sowing upon this soil (a gravelly loam), with proper tillage, is as beneficial as early: numerous repetitions of these trials will prove how far this remark may be just.

EXPERIMENT N^o 4.

Marked, in the same field as N^o 3, more perches of fallow, and sowed them with one ounce as before.

N^o 1. September 1

2. - - 12

3. - - 19

4. - - 27

A ploughing was then given.

5. October 3

6. - - 11

7. - - 30

Another ploughing.

8. November 6

An exact equality was observed in this, as with the rest of these trials, respecting hoeing and cleaning. The produce,

N^o 1. - - 7 $\frac{1}{4}$ ounces.

2. - - 7 $\frac{1}{4}$

3. - - 8

4. - - 7 $\frac{1}{2}$

N ^o 5.	-	-	7 ounces.
6.	-	-	7½
7.	-	-	6
8.	-	-	6½

I am not able to draw any decisive conclusions from this trial; but the comparative smallness of N^o 7 and 8, notwithstanding two extra-ploughings, would make one imagine that early sowing is best, even on this land.

EXPERIMENT N^o 5.

Marked, in field L*, in 1765, perches of fallow, and sowed them each with an ounce as before.

N^o 1. August 18

2. - - 31

3. September 10

4. - - 17

5. - - 24

Ploughed again.

6. October 1

7. - - 13

8. - - 20

Another ploughing.

9. - - 31

10. November 9

11. - - 16

Another ploughing.

12. - - 23

13. December 3

14. - - 13

The management of hoeing, cleaning, &c. the same. The produce,

N^o 1. - - 6½

2. - - 6½

3. - - 6½

4. - - 6½

5. - - 6½

6. - - 6½

7. - - 5½

8. - - 5½

9. - - 5

10. - - 5

11. - - 5½

12. - - 4½

13. - - 3½

14. - - 3

This

This experiment, though not decisive in every point, is very important in the result of the late sowing. October is, in Suffolk, supposed to be the best time for wheat-feed sowing; but this shews that september is at least equal, if not superior: and, what would astonish half the farmers in the country is, that the latter part of august is as good as either; but after october the product decreases; and in december it comes to a trifle. This effect is particular, as the latter-sown corn had the advantage of three ploughings more than the early.

EXPERIMENT N° 6.

In 1765, marked some perches of fallow in field L*, and sowed them each with one ounce of feed, at the following times:

N° 1.	August	23
2.	-	31
3.	September	3
	Ploughed again.	
4.	-	16
5.	-	24
6.	-	28
	Another ploughing.	
7.	October	7
8.	-	16
9.	-	26
	Another ploughing.	
10.	November	4
11.	-	14
12.	-	20
13.	-	28
	Another ploughing.	
14.	December	6
15.	-	12
16.	-	18

Hoeing and cleaning, &c. performed on the same days. The produce,

N° 1.	-	5½ ounces.
2.	-	5¼
3.	-	7¼
4.	-	6½
5.	-	6¼
6.	-	6
7.	-	6¼
8.	-	6
9.	-	5½
10.	-	5¼

N ^o 11.	-	-	5 ounces.
12.	-	-	4½
13.	-	-	5
14.	-	-	4½
15.	-	-	4½
16.	-	-	4½

This experiment, like the last, appears to me to have an important result. So early as august, seems to be somewhat improper for sowing: from the beginning of september to the middle of october the most aduantageous season: november bad, but december worse; and this degradation, notwithstanding the progression of ploughings, which is a material point, and by no means to be overlooked.

EXPERIMENT N^o 7.

In 1765, marked, in field M*, some perches of fallow, and sowed them each with one ounce of seed, at the following seasons:

N ^o 1.	August	23
2.	September	3
3.	-	10
	Fresh ploughed.	
4.	-	21
5.	-	28
6.	October	4
7.	-	11
8.	-	18
	Another ploughing.	
9.	-	25
10.	November	2
11.	-	9
	Another ploughing.	
12.	-	16
13.	-	23
14.	-	30
	Another ploughing.	
15.	December	7
16.	-	18
17.	-	26

Management of all the same. The produce,

N ^o 1.	-	-	4½ ounces.
2.	-	-	5½
3.	-	-	7
4.	-	-	7½
5.	-	-	7½
6.	-	-	7½

N ^o 7.	-	-	7 $\frac{1}{4}$ ounces.
8.	-	-	7 $\frac{1}{2}$
9.	-	-	6 $\frac{1}{4}$
10.	-	-	6 $\frac{1}{4}$
11.	-	-	6 $\frac{1}{4}$
12.	-	-	6
13.	-	-	5 $\frac{1}{2}$
14.	-	-	5
15.	-	-	4 $\frac{1}{2}$
16.	-	-	4
17.	-	-	4

We find in this table, that the principal produce is from N^o 3 to 8, that is, from the 10th of september to the 18th of october; before and after which time we do not find any date with so considerable a one. The similarity of the produce of the dates, within that period, gives much reason to suppose an equality from the beginning to the end of it. Number of ploughings are *apparently* of no effect in making up for too late a sowing; but whether that is really the case, cannot be absolutely known, as the product might otherwise have been less.

EXPERIMENT N^o 8.

In 1765, marked perches, in field M*, on a clover lay that had been mown once, and part twice; the ploughings did not vary in this experiment. They were sown in the following seasons:

N ^o 1.	August	17
2.	-	26
3.	September	3
4.	-	10
5.	-	21
6.	-	28
7.	October	11
8.	-	18
9.	-	25
10.	November	2
11.	-	9
12.	-	16
13.	-	23
14.	-	30
15.	December	7
16.	-	18
17.	-	26

Those numbers that were sown before the second crop of clover had come to a proper height for hay, were mown young, and the produce carried

carried off. The hoeing and weeding were performed the same days to all. The produce as follows:

N ^o 1.	-	-	3 $\frac{1}{4}$ ounces.
2.	-	-	3 $\frac{1}{4}$
3.	-	-	5
4.	-	-	7
5.	-	-	8 $\frac{1}{2}$
6.	-	-	7 $\frac{1}{2}$
7.	-	-	7
8.	-	-	7
9.	-	-	7
10.	-	-	6 $\frac{1}{2}$
11.	-	-	6 $\frac{1}{4}$
12.	-	-	6 $\frac{1}{2}$
13.	-	-	5 $\frac{1}{2}$
14.	-	-	5 $\frac{1}{2}$
15.	-	-	4 $\frac{1}{2}$
16.	-	-	5
17.	-	-	4 $\frac{3}{4}$

This experiment, upon the whole, confirms the result of the preceding; which is of the more consequence, as it is a total variation, being a clover land crop, and all the rest fallow ones. But the trifling product of the first numbers sown early, shews that very early sowing is vastly worse on clover than on fallow land; which, I suppose, is owing to the roots of the clover not only being short of their proper size and growth, but also in an improper state for forwarding the growth of the wheat; perhaps so full of juices as to mould the feed.

EXPERIMENT N^o 9.

In 1766, marked several perches of fallow land, in field L*, and sowed them each with one ounce of feed as before, at the following seasons:

N ^o 1.	July	30
2.	August	4
3.	-	11
4.	-	18
A fresh ploughing.		
5.	-	25
6.	September	1
7.	-	8; heavy rain.
Another ploughing.		
8.	-	15
9.	-	22
10.	-	29

Another ploughing. 8 W

- | | | | |
|-----|---------|----|----|
| 11. | October | 7 | 9 |
| 12. | - | 13 | 10 |
| 13. | - | 20 | 11 |
| 14. | - | 27 | 12 |

Another ploughing. 13

- | | | | |
|-----|----------|----|--------------------------|
| 15. | November | 3 | 13 |
| 16. | - | 13 | heavy rain fell the 8th. |
| 17. | - | 17 | 14 |
| 18. | - | 24 | 15 |

Another ploughing. 18

- | | | | |
|-----|----------|----|--|
| 19. | December | 1 | 16 |
| 20. | - | 8 | 17 |
| 21. | - | 15 | 18 |
| 22. | - | 22 | 19 |
| 23. | - | 29 | 20 |
| 24. | January | 29 | the severity of the weather prevented sowing sooner. |

25. February 7

Another ploughing. 20

- | | | | |
|-----|-------|----|----|
| 26. | - | 14 | 21 |
| 27. | - | 21 | 22 |
| 28. | - | 28 | 23 |
| 29. | March | 7 | 24 |
| 30. | - | 14 | 25 |

Another ploughing. 26

- | | | | |
|-----|-------|----|----|
| 31. | - | 28 | 26 |
| 32. | April | 6 | 27 |

33. - 13

34. - 23

Another ploughing. 28

35. - 28

I should here remark, that the ploughings were never performed when the ground was in an improper state for the operation for a wheat sowing, respecting wet I mean. The hoeing and weeding were performed on the same days to all, except the spring sowings, which varied once. The produce,

N^o 1. - 3 ounces.

2. - 3 1/2

3. - 3 1/4

4. - 5

5. - 5 1/4

6. - 7 1/4

7. - 8

N ^o 8.	ploughing	71	ounces.
9.	-	-	80
10.	-	-	7½
11.	-	-	7½
12.	-	-	6½
13.	-	-	71
14.	-	-	6½
15.	-	-	6½
16.	-	-	6½
17.	-	-	6½
18.	-	-	6
19.	-	-	5½
20.	-	-	4½
21.	-	-	5
22.	-	-	4½
23.	-	-	4
24.	-	-	3½
25.	-	-	3½
26.	-	-	3
27.	-	-	3½
28.	-	-	3
29.	-	-	3
30.	-	-	3½
31.	-	-	3½
32.	-	-	3½
33.	-	-	3
34.	-	-	2½
35.	-	-	3

The result of this trial, I apprehend, is very important: the seasons, from first to last, are so extremely various, that the effect might easily be supposed to carry conclusions of consequence. The end of july, and the first fortnight in august, are evidently very improper seasons; the last fortnight better. From the 1st of september to the 20th of october, the prime season of the whole experiment; from the 27th of october to the 24th of november, the produce is not greatly inferior. The december sowings are much lower. Those of january, and all after, very low; not much difference between them. Now it must be considered, that there are eight ploughings between the first and the last sown, and yet the produce of each is the same---and it is observable, that there appears much reason to think, that the ploughings have little, if any, effect. The season appears to be the cause alone of variation: a point of great consequence for every farmer thoroughly to attend to. Early sowing (earlier than is common) is evidently advantageous; which should likewise be remarked, as a ploughing,

or perhaps two, may be sowed with profit—an object of much consequence to every husbandman.

EXPERIMENT N^o 10.

In 1766, marked 35 perches, as in the preceding trials, and sowed them in the same days. The ploughings were all repeated at the same time; but a variation made in all, of manuring the land with rotten dung, at the rate of about 12 loads *per* acre; which was on all ploughed in by the earth preceding the sowing. The produce as follows:

N ^o	1.	-	-	3	ounces.
	2.	-	-	3	
	3.	-	-	3½	
	4.	-	-	6	
	5.	-	-	5½	
	6.	-	-	6	
	7.	-	-	7½	
	8.	-	-	8	
	9.	-	-	8½	
	10.	-	-	8¾	
	11.	-	-	7½	
	12.	-	-	7¼	
	13.	-	-	6¾	
	14.	-	-	7	
	15.	-	-	7¼	
	16.	-	-	7	
	17.	-	-	6½	
	18.	-	-	6½	
	19.	-	-	5¾	
	20.	-	-	5½	
	21.	-	-	5½	
	22.	-	-	5¼	
	23.	-	-	5¼	
	24.	-	-	5	
	25.	-	-	4½	
	26.	-	-	4½	
	27.	-	-	4	
	28.	-	-	3¾	
	29.	-	-	3	
	30.	-	-	3	
	31.	-	-	3¼	
	32.	-	-	3	
	33.	-	-	3	
	34.	-	-	2½	
	35.	-	-	2	

In 1766, marked 35 perches of fallow, in field M*, and sowed them as before, on the same dates, and with the same ploughings, as the two last inserted trials. The produce as follows:

N ^o .	1.	-	-	3 $\frac{1}{4}$ ounces.
	2.	-	-	3 $\frac{1}{2}$
	3.	-	-	3 $\frac{1}{2}$
	4.	-	-	6 $\frac{1}{4}$
	5.	-	-	5 $\frac{3}{4}$
	6.	-	-	6 $\frac{1}{2}$
	7.	-	-	7
	8.	-	-	7 $\frac{1}{2}$
	9.	-	-	6 $\frac{3}{4}$
	10.	-	-	7 $\frac{1}{2}$
	11.	-	-	7 $\frac{1}{4}$
	12.	-	-	7 $\frac{1}{2}$
	13.	-	-	7 $\frac{1}{2}$
	14.	-	-	7 $\frac{3}{4}$
	15.	-	-	6 $\frac{3}{4}$
	16.	-	-	7
	17.	-	-	7
	18.	-	-	7
	19.	-	-	6 $\frac{1}{2}$
	20.	-	-	6 $\frac{1}{2}$
	21.	-	-	5 $\frac{3}{4}$
	22.	-	-	6
	23.	-	-	6 $\frac{1}{4}$
	24.	-	-	5 $\frac{1}{2}$
	25.	-	-	5 $\frac{1}{4}$
	26.	-	-	5
	27.	-	-	5 $\frac{1}{4}$
	28.	-	-	5
	29.	-	-	5
	30.	-	-	4 $\frac{3}{4}$
	31.	-	-	3 $\frac{3}{4}$
	32.	-	-	3 $\frac{1}{2}$
	33.	-	-	3 $\frac{1}{4}$
	34.	-	-	3 $\frac{1}{4}$
	35.	-	-	3

This

This experiment is a confirmation of most of the preceding. From September 8 to November 24, is the chief produce, which agrees much with the result of former trials. Very late sowings, notwithstanding the increase of ploughings, are pernicious; and very early ones, the same. There cannot be a greater proof of the importance of sowing at the proper season, than its more than balancing all the advantages of extra tillage.

I must observe upon this series of experiments, that all were kept quite clean of weeds; which was a variation of expense, and

EXPERIMENT N° 12.

In 1766, &c. marked 35 perches, and sowed them as before, in field M, on a clover lay. The dates the same as in the preceding trials. The produce as follows:

N ^o 1.	2½	ounces.
2.	3½	
3.	3½	
4.	4	
5.	5½	
6.	5½	
7.	8	
8.	8½	
9.	7½	
10.	7½	
11.	7	
12.	7½	
13.	7	
14.	7	
15.	7	
16.	6½	
17.	7	
18.	7	
19.	6½	
20.	6½	
21.	6	
22.	6½	
23.	5½	
24.	5	
25.	4½	
26.	5	
27.	4½	
28.	4½	
29.	4½	
30.	3½	
31.	3½	
32.	3	
33.	3	
34.	2½	
35.	2½	

From

From

From September 8th to December 2d, is the season of the greatest produce: it lasts longer in this trial than in former ones, which must certainly be attributed, in part, to the soil being a gravel. The other dates are good or bad, in proportion to their being near or far removed from that period.

GENERAL OBSERVATIONS.

I must observe upon this series of experiments, that all were kept quite clean of weeds; which management occasioned a variation of expence, according to the variety of seasons. This had determined me to draw each trial into a calculation *per acre*, with all the operations of hand-hoeing, weeding, ploughing, &c. charged minutely; but the great number of trials I made, would, so extended in the register, have filled a volume; and these papers, after all possible reductions, being yet more voluminous than I could wish, occasioned my rejecting that design; and, instead thereof, the minuting a few general remarks, by way of explanation, to the reader.

The early sown corn required a thorough weeding before winter; in respect of tillage after sowing, this was all the difference in the expence (ploughings excepted), between sowing in July or August, and September or October. The common farmers' principal objection to early sowing was this point of weeds: "if," said they, "we were to sow so early, our crops would be over-run with weeds, and destroyed by them." But this would have been no objection to the practice, had it otherwise proved beneficial: for, upon a supposition that the fallow could not be freed so soon from weeds, yet the crop admits the most exact cleaning. I have often had broad-cast crops thoroughly cleaned from all sorts of weeds by hand-work; and, by an earlier growth of them, such a work might be performed so much the easier: and, if such a system was not approved, that of hand-hoeing, with small 3 or 4-inch hoes, would effectually answer every objection. Upon the whole, I may assert from experience, that in broad-cast sowing, the additional cleaning from weeds, arising from early sowing, will not, upon an average of several years, amount to above 5s. *per acre*, supposing the fallow to have been managed as it ought in common husbandry, *viz.* the tillage to begin in the autumn, or before: but, as to the execrable method of not beginning to plough till after barley sowing, I certainly need not add that, with such a conduct, a very early sown crop must stand a chance of being absolutely destroyed. And I should further observe, that these remarks are proportionably applicable to that season which these experiments shew to be the most beneficial, *viz.* September, and the first fortnight in October; which is, upon the whole, a full month earlier than the Suffolk farmers venture their seed in the ground; consequently, any objections to that season, of this nature, are void of foundation.

As to the dates of the time of sowing, it upon the whole appears decisively, that the month of September is the most advantageous; and next, with a slight inferiority, the first fortnight of October: succeeding months to April

are all bad; the more remote the worse; and that notwithstanding all advantages of extra-ploughings. This result is peculiarly important for giving much tillage to land; for a certain decrease of product is evidently a pernicious practice, and such as never could obtain, without the assistance of false ideas.

The common idea of this neighbourhood is, that a fortnight after old michaelmas is the prime wheat-feed season; but these experiments, I apprehend, clearly prove the contrary.

I never perceived any difference between the corn sown at different seasons, in respect of distempers, or being beaten down.

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S E C T. VI.

MISCELLANEOUS EXPERIMENTS.

WHOEVER, for some years, makes it his business to form numerous experiments in husbandry, will probably find many trials that are difficult to arrange under distinct heads of enquiry. This has been my case with most articles of culture. A *complete* course of experimental agriculture, in which the trials under every head are numerous enough to throw their effects into general averages, and from them to draw decisive conclusions, must never be expected from a private individual. The expence of conducting experiments is too great; and the attention requisite too minute and unremitted. Men that have money enough will not give the attention; and those who would submit to the latter, are seldom possessed of the former.

In the course of my business, many experiments occurred, in a stile of curiosity, that could not, with any propriety, be classed under the preceding sections: some that I tried in consequence of my reading, and others from ideas of my own; many turned out apparently useless, others were attended with effects that may render them of utility: I extract such as I apprehend most worthy the publick eye.

S T E E P S.

EXPERIMENT N^o 1.

In september 1765, marked some pieces of fallow land, in field L*, and sowed on them some wheat, prepared in the following manner:

- N^o 1, Half a pound steeped twenty-four hours in a brine of salt, strong enough to bear an egg, and then dried with lime.
2, The same time in the drainings of a horse dunghill, and then dried with lime.

308] **U R A I N I** Ditto in a mixture, half the above brine, and half the drainings of a dunghill.

N^o 3, The same time in a brine of salt petre, strong enough to bear an egg, dried with lime.

4, The same time in bullocks blood, dried with lime.

5, Not steeped at all.

They were sown on the same day, and on the same breadth of land, broad-cast. The produce,

N ^o 1,	3½ lb.
2,	3½
3,	3½
4,	3½
5,	3½

The quality of the grain very similar: if any difference, N^o 3 rather the best.

EXPERIMENT N^o 2.

In september 1765, sowed parcels of wheat, prepared as follows, each half a pound, in field L*:

N^o 1, Steeped twelve hours in brine of salt, strong enough to bear an egg, dried with lime.

2, Steeped ditto in a mixture, half the above brine, and half the drainings of a horse dunghill, dried with lime.

3, Ditto in a lye made of lime, wood ashes, and salt, dried with lime.

4, Ditto in urine, dried with lime.

5, Ditto in ditto, and pigeons dung and lime, dried with lime.

6, Unsteeped.

They were sown broad-cast on the same day, and all succeeding management equal. The produce,

N ^o 1,	3 lb.
2,	3½
3,	3½
4,	4
5,	4
6,	3½

The quality of the grain perfectly similar. There appears to be some little superiority in the urine; but I do not think it great enough to determine the point, unless it ran through a great number of experiments.

EXPERIMENT N^o 3.

In september 1765, sowed some parcels of wheat broad-cast on the same breadth of fallowed land, in field L*, prepared in the following manner:

N^o 1, Steeped twelve hours in urine.

2, Ditto in a lye of salt, pigeons dung, and wood ashes.

3, Ditto in a lye of salt petre.

N^o 4,

N^o 4, Ditto in a mixture, half N^o 24 and half the drainings of a dunghill.

5, Ditto in bullocks blood.

6, Ditto in half ditto and half urine.

7, Ditto in common salt brine.

8, Unsteeped.

Of each half a pound, and all dried with lime. The produce,

N^o 1, 3 $\frac{1}{4}$ lb.

2, 3 $\frac{1}{4}$ lb.

3, 3 $\frac{1}{4}$ lb.

4, 3 $\frac{1}{4}$ lb.

5, 3 lb.

6, 3 $\frac{1}{4}$ lb.

7, 3 $\frac{1}{4}$ lb.

8, 3 $\frac{1}{4}$ lb.

Quality of the grain exactly the same. It appears very clearly from hence, that if these steeps had any effect, it must be very trifling; the unsteeped is as good as any of the rest.

EXPERIMENT N^o 4.

In september 1765, sowed some spots with wheat seed on a fallow, in field M*, as under:

N^o 1, Steeped twelve hours in a lye of lime.

2, Ditto in ditto of wood ashes.

3, Ditto in ditto of pigeons dung.

4, Ditto in common salt brine.

5, Ditto in salt petre brine.

6, Ditto in blood.

7, Ditto in urine.

8, Ditto in the drainings of a dunghi.

9, Ditto in a lye of salt petre, wood ashes, pigeons dung, and urine.

10, Unsteeped.

Of each a quarter of a pound, and all dried with lime. They were sown the same day, and the succeeding management the same. The produce,

N^o 1, 1 $\frac{1}{4}$ lb.

2, 1 $\frac{1}{4}$ lb.

3, 1 $\frac{1}{4}$ lb.

4, 1 $\frac{1}{4}$ lb.

5, 2 lb.

6, 1 $\frac{1}{4}$ lb.

7, 2 lb.

8, 1 $\frac{1}{4}$ lb.

9, 1 $\frac{1}{4}$ lb.

10, 1 $\frac{1}{4}$ lb.

[R 2]

The

The quality of the grain in general the same; if any difference, it was in favour of the unsteeped. In this trial, urine and salt petre brine seem to have something of a superiority; but it is too small to draw conclusions from.

EXPERIMENT N° 5.

In october 1765, sowed several parcels of wheat on a fallow, in field M*, as follows:

- N° 1, Steeped twelve hours in a lye of lime, salt, salt petre, wood ashes, pidgeons dung, blood, urine, and the drainings of a dunghill, mixed together.
 2, Steeped in ditto six hours.
 3, Steeped in ditto eighteen hours.
 4, Ditto in ditto twenty-four hours.
 5, Ditto twelve hours in a strong mixture of foot and water.
 6, Ditto in ditto foot and urine.
 7, Unsteeped.

Of each a quarter of a pound, and all dried with lime. The produce,

N° 1, 2 lb.

2, 2

3, 2

4, 1½

5, 2

6, 2

7, 2

The grain the same. The equality of these products is very remarkable. From N° 4 being inferior, it might, perhaps be concluded, that twenty-four hours are too long a time for steeping.

EXPERIMENT N° 6.

In october 1766, marked some pieces of fallow, in field L*, and sowed them each with a quarter of a pound of wheat, prepared in the following manner:

- N° 1, Steeped twelve hours in a strong lye of wood ashes.
 2, Ditto in ditto of common salt.
 3, Ditto in ditto of salt petre.
 4, Ditto in ditto of foot.
 5, Ditto in ditto of pidgeons dung.
 6, Ditto in ditto of lime.
 7, Ditto in blood.
 8, Ditto in urine.
 9, Ditto a lye of urine and lime.
 10, Ditto ditto of urine and blood.
 11, Ditto in ditto of salt petre, and drainings of a dunghill.
 12, Ditto in ditto, a mixture of all.
 13, Unsteeped.

All were dried with lime. The management equal. The produce,

N ^o 1,	1 $\frac{1}{4}$ lb.
2,	1 $\frac{1}{4}$
3,	1 $\frac{1}{4}$
4,	2
5,	1 $\frac{1}{4}$
6,	1 $\frac{1}{4}$
7,	1 $\frac{1}{4}$
8,	2
9,	1 $\frac{1}{4}$
10,	1 $\frac{1}{2}$
11,	2
12,	1 $\frac{1}{4}$
13,	1 $\frac{1}{4}$

The grain of all was perfectly alike. The small superiority of N^o 4, 8, and 11, I apprehend is too trifling to be of consequence; and these slight superiorities in the several experiments vary so much, that they leave no room, or at least very little, to draw conclusions from.

EXPERIMENT N^o 7.

In october 1766, marked some pieces of fallow land, in field L*, and sowed each with wheat, differently prepared:

N^o 1, Steeped in strong brine of salt.

2, In ditto of salt petre.

3, In a strong lye of wood ashes.

4, In ditto of foot.

5, In ditto of pigeons dung.

6, In ditto of bay salt.

7, In ditto of common salt, salt petre, and bay salt.

8, In blood.

9, In urine.

10, In the drainings of a dunghill.

11, Unsteeped.

Of each a quarter of a pound, all dried with lime. The culture and management quite alike. The produce,

N ^o 1,	2lb.
2,	2
3,	2
4,	2
5,	1 $\frac{3}{4}$
6,	1 $\frac{3}{4}$
7,	2
8,	2
9,	2 $\frac{1}{4}$
10,	2
11,	2

The grain perfectly similar. The result of this, like the rest of the trials, gives no reason to conclude any of these steps to be of service.

CHANGE OF SEED.

EXPERIMENT N^o 8.

In September 1764, marked three square perches of fallow, in field L*, and sowed them in the following manner:

- N^o 1, With one pint of red wheat, that had been raised for several years in this parish.
- N^o 2, With one pint of Kentish wheat, from the isle of Thanet.
- N^o 3, With one pint of red wheat, from Isleham, in Cambridgeshire.

The produce of these perches was,

- N^o 1, 4 quarts of good wheat. The value 41 s. per quarter, 2 quarters 4 bushels per acre.
- 2, 5 quarts. The value 43 s. 3 quarters 1 bushel per acre.
- 3, 4½ quarts. The value 42 s. 2 quarters 6 bushels 2 pecks per acre.

This trial appeared to me very satisfactory. The samples were shewn at once to a merchant, who fixed the prices. The difference of the product is very considerable, and also the price. A change is evidently advantageous. The Cambridgeshire is more in quantity, and better in quality, than our own feed; and the Kentish considerably beyond both.

EXPERIMENT N^o 9.

In September 1764, marked five square perches of fallow, in field M*, and sowed them,

- N^o 1, With one pint of red wheat, the growth of the neighbourhood for several years.
- 2, With one pint of white wheat, the same growth.
- 3, With ditto, bearded wheat, of the same growth.
- 4, With ditto, Kentish red wheat, from Thanet.
- 5, With red, from Cambridgeshire.

The management equal with all. The produce as follows:

- N^o 1, 4 quarts 1 pint. The value 41 s. 2 quarters 6 bushels 2 pecks per acre.
- 2, 4 quarts. Value 42 s. 2 quarters 4 bushels per acre.
- 3, 5 quarts. Value 39 s. 3 quarters 1 bushel per acre.
- 4, 5 quarts. Value 43 s. 3 quarters 1 bushel per acre.
- 5, 4 quarts. Value 42 s. 2 quarters 4 bushels per acre.

The bearded wheat in this experiment yields more in quantity than any of the other sorts, except the Kentish; but the value is the least: this is not particular, as such corn scarce ever equals the white and red in value. The Kentish seed makes a great figure in this trial; for the price is not only greater than that of any of the rest, but the quantity equals the bearded.

EXPE.

EXPERIMENT N° 10.

The first week in october 1765, marked six square perches of fallow, in field L*, and sowed them with the following sorts of wheat:

- N° 1, With one pint of white wheat, that grew in field M*.
- 2, With a pint of ditto, that grew in L*.
- 3, With Kentish red wheat, once raised since it came from the isle of Thanet.
- 4, With common bearded wheat.
- 5, With the hollow strawed bearded ditto, called *blue chaff* in Suffolk.
- 6, With red wheat from a sandy field in Norfolk.

The management was in every respect the same. The produce as follows:

- N° 1, 4 quarts. The value 42 s. 2 quarters 4 bushels *per* acre.
- 2, 3 quarts 1 pint and a half. Value 40 s. 2 quarters 2 bushels 3 pecks *per* acre.
- 3, 4 quarts 1 pint. Value 43 s. 2 quarters 6 bushels 2 pecks *per* acre.
- 4, 4 quarts 1 pint. Value 41 s. 2 quarters 6 bushels 2 pecks *per* acre.
- 5, 4 quarts 1 pint. Value 41 s. ditto *per* acre.
- 6, 4 quarts. Value 41 s. 2 quarters 4 bushels *per* acre.

In this trial the Kentish wheat maintains its superiority; but rather in quality than in quantity. The two sorts of bearded wheat come next. Our own white wheat and the red from Norfolk equal in quantity, but the former superior in quality, which rather surprized me. The advantage of the change of soil is extremely apparent in N° 1 and 2: there is a bushel and a peck *per* acre in quantity, and two shillings a quarter in quality, superiority in the same wheat, only from a change of soil in the same farm.

EXPERIMENT N° 11.

The first week in october 1765, marked ten square perches of fallow, in field L*, and sowed them with the following sorts of wheat:

- N° 1, With one pint of red wheat that grew in field M*.
- 2, With ditto ditto that grew in field L*.
- 3, With ditto from a gravelly soil in the neighbourhood of Chelmsford, in Essex.
- 4, With ditto from the north of Lincolnshire.
- 5, With common bearded wheat, the growth of the neighbourhood.
- 6, With ditto from Cambridgeshire.
- 7, With white wheat from Bear Key, London. I know not what growth.
- 8, With red ditto from off a sandy soil in Norfolk.

N° 9,

N^o 9, With Kentish red wheat, that had been once raised on a gravelly soil in this farm.

10, With ditto directly from the isle of Thanet.

The culture and management in all respects the same. The produce,

N^o 1, 4 quarts. Value 41 s.

2, 3 quarts 1 pint. Value 39 s.

3, 4 quarts. Value 41 s.

4, 4 quarts. Value 41 s.

5, 4 quarts 1 pint. Value 39 s.

6, 4 quarts. Value 41 s.

7, 5 quarts. Value 42 s.

8, 4 quarts. Value 39 s.

9, 4 quarts. Value 41 s.

10, 4 quarts 1 pint. Value 42 s.

The common bearded wheat and that from the isle of Thanet are two, whose produce is greater than most; but the value of the latter exceeds that of the former by three shillings a quarter, which is considerable: but the first in the whole list is the white wheat from London, which exceeds the rest so much, that I am much concerned I know not what country it is the product of: the inferiority of the wheat that was raised in the same field, to all the rest, proves clearly the benefit, at least, of a change of soil. All the rest appear to be nearly on a par.

EXPERIMENT N^o 12.

The middle of october 1766, marked seven square perches of fallow, in field L*, and sowed them with various sorts of wheat, as follows:

N^o 1, With a pint of white wheat from Hertfordshire.

2, With a pint of red from Kent.

3, With a pint of ditto twice sown on this farm.

4, With a pint of red from the vale of Evesham.

5, With a pint of wheat from Russia.

6, With a pint of ditto from Cadiz.

7, With a pint of ditto from Isleham, in Cambridgeshire.

The management of each was perfectly the same. The produce,

N^o 1, 3 quarts. Value 43 s.

2, 3½ ditto. Value 43 s.

3, 3 ditto. Value 41 s.

4, 4 ditto. Value 43 s.

5, 4 ditto. Value 42 s.

6, 3½ ditto. Value 43 s.

7, 3 ditto. Value 42 s.

The seed from the vale of Evesham, in this trial, is superior to all the rest. I should have apprehended the foreign wheats would have exceeded the

the others; but that from Russia comes very near it, and is superior to the Spanish: the rest are not far from an equality.

EXPERIMENT N° 13.

The first week in October 1766, marked six perches of fallow, in field M*, and sowed them with different wheats:

N° 1, With one pint of wheat from Cadiz.

2, With ditto from Dantzick.

3, With ditto red, from the vale of Evesham.

4, With ditto white, from a sandy soil in Norfolk.

5, With red ditto, that had for several years been raised in the neighbourhood.

6, With ditto from Kent.

7, With ditto from Isleham, in Cambridgeshire.

8, With ditto common bearded wheat.

9, With ditto blue chaff ditto.

10, With red ditto from Chelmsford, in Essex.

The culture and management were in every respect the same. The produce,

N° 1, 3 quarts 1 pint. Value 42 s. 6 d. 2 quarters 1 bushel 2 pecks *per* acre.

2, 3 quarts 1 pint. Value 43 s. Ditto *per* acre.

3, 3 quarts 1½ pint. Value 43 s. 6 d. 2 quarters 2 bushels 3 pecks *per* acre.

4, 2 quarts 1 pint. Value 40 s. 1 quarter 4 bushels 2 pecks *per* acre.

5, 2 quarts. Value 39 s. 1 quarter 2 bushels *per* acre.

6, 3 quarts. Value 43 s. 1 quarter 7 bushels *per* acre.

7, 3 quarts. Value 42 s.

8, 3 quarts 1 pint. Value 39 s. 2 quarters 1 bushel 2 pecks *per* acre.

9, 3 quarts 1 pint. Value ditto. Ditto *per* acre.

10, 3 quarts 1 pint. Value 42 s. 6 d. Ditto *per* acre.

The largest product is from the Worcestershire wheat, and also the greatest price; from which we may judge, that mere distance is not the circumstance alone that occasions variations; both that and soil must combine to produce considerably greater crops than from common seed. The next in rank is the Dantzick wheat, which comes near the other, and exceeds the Spanish by six pence a quarter in value, but is equal in quantity; this might be called an equality. The foreign wheats being superior to all the English, but one, is a proof, at least, that a great distance is of much consequence; the soil whereon these wheats grew might possibly be the reason of their inferiority to the Worcestershire. A change from a poor sandy soil is of no use: the small produce of N° 5 proves strongly the consequence of a change in general.

GENERAL OBSERVATIONS.

From these experiments, I apprehend, several very important conclusions may be drawn.

First. It appears that foreign wheats, from the most opposite climates, are superior to most of our own.

Secondly. Sowing the wheat that has for several years been raised in the neighbourhood, is evidently a most unprofitable practice, and worse than any change that can be made.

Thirdly. A change from a poor Norfolk sand is the worst that was made; it not succeeding even upon a stiff loam.

Fourthly. Wheat from the vale of Evesham excellent seed, superior in many instances to all others. The Kentish red wheat likewise very fine, and also the Cambridgeshire; but not equal to either of the former.

Fifthly. There does not appear to be much difference between the red and white wheats; the bearded ones yield a large produce, but are inferior in quality.

Sixthly. A mere change of soil is of much consequence, as appears from the superiority of the clay wheats on the gravel soil, and the gravel wheat on the clay soil, in that which has been long in the neighbourhood.

DISTEMPERS OF WHEAT.

EXPERIMENT N° 14.

The first week in october 1765, harrowed a piece of fallow land, in field L*, fine, and, marking some drills, sowed them in the following manner:

- N° 1, With 100 grains of clean, fine, weighty red wheat.
 2, With 100 of thin shrivelled red wheat, but clean.
 3, With 100 rubbed in the dust of burnt wheat.

They were kept clean by weeding and hoeing. The nature of the produce is stated in one word: all were equally found; I do not think the least difference could be discovered between them; an effect which much surprized me.

EXPERIMENT N° 15.

The middle of october 1765, marked some drills on a piece of well-fallowed land, in field L*, and sowed them,

- N° 1, With 100 grains of clean weighty well-looking red wheat.
 2, With 100 ditto of ditto, rubbed with the powder of burnt wheat.
 3, With 100 ditto of shrivelled thin ill-looking wheat, but clean.
 4, With 100 ditto ditto, rubbed with the black dust.

N° 5, With 100 grains picked at random, rubbed in the black dust, and then well washed in plain water.

The weeding and hoeing were the same to each. The produce,

N° 1, Clean good wheat.

2, Clean; rather inferior to N° 1.

3, Good wheat; but had one burnt ear.

4, Much the same quality as N° 3: none burnt.

5, Ditto.

From these trials one would suppose the black powder has nothing to do as the cause of the distemper.

EXPERIMENT N° 16.

The middle of october 1765, marked some drills contiguous, in field L*:

N° 1, Well fallowed land.

2, An old balk, that had at different times been weeded, and now but once ploughed.

3, Clover land, once ploughed.

4, Fallowed land, well dunged with rotten farm-yard dung.

5, Ditto, ditto with long farm yard dung.

They were all sown with the same wheat, clean, sound weighty grain; 100 in each drill. The produce,

N° 1, Clean good corn.

2, Thin shrivelled grain, and several ears burnt.

3, Clean and good, equal to N° 1.

4, Ditto.

5, Ditto.

The inferiority of N° 2 is quite consistent with reason. I expected the long dung would have produced the worst grain; but the equality was very exact.

EXPERIMENT N° 17:

The first week in november 1765, marked some drills, in field L*:

N° 1, Summer-fallowed;

2, Ditto, and dunged with rotten yard-dung;

3, Ditto, and dunged with long horse dung.

4, Very completely managed; a two years fallow, and twice well manured with rotten compost of farm-yard dung and turf.

5, After barley on one ploughing.

6, After two crops of oats on one ploughing.

A double drill on each, one sown with clean, sound wheat, and the other with thin, poor, shrivelled grains. The weeding was quite equal.

The produce as follows:

N° 1, Good feed. Fine clean wheat in general, but has two burnt ears.

Ditto, bad feed. Ditto, only has four burnt ears.

- N° 2, Good feed. Good corn, but not better than N° 1.
 Ditto, bad feed. No difference between this and the good feed.
 N° 3, Good feed. Good corn, but not equal to N° 2.
 Ditto, bad feed. Several burnt ears, and the grain not so good as that from the best feed.
 N° 4, Good feed. Exceedingly fine, bright, weighty grain, superior to all the rest.
 Ditto bad feed. Good corn, equal to N° 2.
 N° 5, Good feed. But indifferent grain, and has three burnt ears.
 Ditto, bad feed. Nearly equal to the good, and has also three burnt ears.
 N° 6, Good feed. Thin and rather shrivelled grain, but clean.
 Ditto, bad feed. Very bad, and has seven burnt ears.

One must not, from such experiments, singly taken, conclude too much; but from this there is reason to think, that good husbandry is the best preservative against the distempers of wheat: the double fallow and manuring yielded much the finest grain. Bad feed is very mischievous upon land not in excellent order; but upon soils that are in proper heart, it does not appear a matter of so much consequence as might be conceived.

EXPERIMENT N° 18.

The middle of october 1766, marked twelve drills, in field M*:

- N° 1, Summer-fallowed, and sown with clean good feed.
 2, Ditto with thin shrivelled feed, but clean.
 3, Summer-fallowed, and manured with rotten yard-dung; sown with good feed.
 4, Ditto with bad.
 5, Summer-fallowed, and manured with long yard-dung; sown with good feed.
 6, Ditto ditto, sown with bad feed.
 7, A two years fallow, and twice manured, once with rotten farm-yard dung, and once with coal ashes. Good feed.
 8, Ditto ditto. Bad feed.
 9, On a wheat stubble, once ploughed; sown with good feed.
 10, Ditto with bad.
 11, After two crops of wheat and oats, on one ploughing; sown with good feed.
 12, Ditto with bad.

The weeding, &c. the same to all. N° 5, 6, 10, and 12, pretty much mildewed about the middle of july; the rest (though contiguous) escaped. The product as follows:

- N° 1, Sound, bright, and weighty corn.
 2, Something inferior.
 3, Very good, equal to N° 1.

- N° 4, Much the same as N° 2.
 5, Indifferent, not equal to N° 4, and has three burnt ears.
 6, Much worse, but has no burnt ears.
 7, Very fine corn, but not superior to N° 1.
 8, Ditto, and equal.
 9, Middling, worse than N° 2.
 10, Indifferent, something worse than N° 9.
 11, Very bad, worse than any of the preceding, and three burnt ears, and two smutty ones.
 12, Worse still, two burnt ears.

Good husbandry maintains its superiority in this experiment; but long dung, and second and third cropping (all which may be called bad husbandry) appear in a very indifferent light, especially the two latter: the good seed has a manifest advantage, but not unbroken; in the complete management, the bad seed is equal; and, after a summer-fallow, the difference but little. It should seem from thence, that, when the soil is in very good order, it forces the seed to a certain degree, to which the bad arrives; but beyond, the best cannot go: and it is observable, that in the soils badly managed, the worst seed has an effort to make, in which it is much beaten by the good.

EXPERIMENT N° 19.

The second week in october 1766, marked twelve drills, upon a well-fallowed piece of land, field L*, and sowed them as follows:

- N° 1, With 100 grains of clean, sound, weighty red wheat.
 2, With ditto, thin and shrivelled.
 3, With ditto, rubbed in the dust of burnt wheat.
 4, With ditto, rubbed in the dust of smutty wheat.
 5, With ditto, naturally affected with the burnt grain.
 6, With ditto, ditto by smutty grain.
 7, With ditto, burnt grain, well washed in clean waters.
 8, With ditto, smutty grain, ditto.
 9, With ditto, apparently sound grain, but from roots bearing collateral burnt ears.
 10, With ditto, apparently sound grain, but from roots bearing collateral smutty ears.
 11, With ditto, sound red wheat, but rubbed in the dust of burnt barley.
 12, With ditto, sound red wheat, rubbed in the dust of burnt oats.

The culture, while growing, the same to all. The produce as follows:

- N° 1, Very fine corn, and quite sound.
 2, Ditto.
 3, Ditto.
 4, Ditto.

N° 5, Fine corn, but three burnt ears.

6, Ditto, but three smutty ears.

7, Very fine found corn.

8, Ditto.

9, Ditto, but with five burnt ears.

10, Ditto, but four burnt ears.

11, Ditto, but with two burnt ears.

12, Ditto, with five burnt ears.

This experiment I must be allowed to think an important one : from the equality between N° 1, 2, 3, 4, 7, and 8, there is some reason to apprehend, that the quality of the grain is not a matter of consequence ; but, on the contrary, there is likewise reason to imagine, that burnt or smutty grain is more liable to those distempers than found feed. This appears from the only affected products being those from affected feed. It likewise appears, that wheat is affected by the dust of burnt barley or oats, as well as of burnt wheat.

EXPERIMENT N° 20.

The same day that N° 19 was executed, I marked fourteen drills of fallow land, in field M*, and sowed them as follows :

N° 1, With 100 grains of clean, weighty, red wheat.

2, With ditto, thin and shrivelled.

3, With ditto, rubbed in the dust of burnt wheat.

4, With ditto, rubbed in the dust of smutty wheat.

5, With ditto, naturally affected with the burnt grain.

6, With ditto, by the smutty grain.

7, With ditto, by the burnt grain, well washed in clean waters.

8, With ditto, ditto, smutty grain, washed.

9, With ditto, apparently found grain, but from roots bearing collateral burnt ears.

10, With ditto, apparently found grain, but from roots bearing collateral smutty ears.

11, With ditto, found red wheat, rubbed in the dust of burnt white wheat.

12, With ditto, found red wheat, rubbed in the dust of burnt great wheat.

13, With ditto, found red wheat, rubbed in the dust of burnt barley.

14, With ditto, found red wheat, rubbed in the dust of burnt oats.

The hoeing and weeding, and all the management, the same to each. N° 2 and 12 were a little mildewed. The products,

N° 1, Sound and weighty grain.

2, Indifferent, five shillings a quarter worse than N° 1.

3, Sound and weighty grain.

4, Ditto.

N^o 5, Sound and wieghty grain.

6, Ditto.

7, Ditto.

8, Ditto.

9, Good corn, but has five burnt ears.

10, Sound and weighty grain.

11, Ditto, but has three smutty ears.

12, Sound and weighty grain.

13, Not equal to the rest, and has two burnt ears.

14, Sound and weighty grain.

This experiment is by no means decisive: the variations in forming it gave an opening for these distempers to have shewn themselves in a very marked manner; but the result is very different from what I expected. In some instances, distempered seed produced distempered corn; in others, it did not: from the equality of N^o 1, 3, 4, 5, 6, 7, 8, one would imagine the dust has no effect; but N^o 2, being a break in that line, gives much reason to condemn thin and shrivelled seed. N^o 11 is *burnt* seed, and produces smutty corn: of these sort of seeming contradictions there are many.

OBSERVATIONS.

The number of experiments I made on the distempers of wheat, is great; but, as the collective body does not yield many conclusions that are clearly to be drawn from them, I omit the insertion of most. I found, in general, that the nature of these distempers was not to be reduced to similar appearances, corresponding with extraneous similar circumstances. The result of a great number of trials on burnt and smutty wheat, gave little reason to think that the dust was the cause of either. Thin shrivelled grain appears, by numerous trials, to be much inferior for seed to good corn, and especially upon soils not properly prepared. General good husbandry of fallowing and manuring is evidently the surest means of commanding clean as well as good and weighty corn.

I formed also many trials on the mildew, but without discovering any result, except much reason to think it the effect of chance; that is, a distemper brought by the wind. I have found that a thick tall hedge will oftentimes save a considerable part of a field from a mildew; as a proof of which, I have remarked the corn to be affected against a gate or other opening in the hedge, and to escape where sheltered by the hedge. At other times I have observed the central parts of the field to be quite free from it, and all around under the hedges to be attacked. This does not contradict the other remark; when the wind bears a power, the mildew, or insects, are carried by the force of it; but in a calm we may suppose their motion rather perpendicular, in which situation the hedges may have a power of attracting them.

I made some experiments, with design to discover if there are artificial peculiarities in vegetables, arising from modes of culture, that adapt them to the attraction of insects; but, except in two instances, I have never found any such. When the soil is rendered, by the force of manures, uncommonly rich, wheat I have found more apt on such to be mildewed, than on soils not equally manured. The forcing nature of the manure causes an extravasation of the sap, which may very probably be particularly suitable to attract, as well as retain, the insects.

The other instance is the wheat of certain fields being particularly dis-tempered with the mildew. I have known several instances of this; whatever is the management, the chances are always against a crop free from the mildew in such fields. Now, this must be owing to the soil giving a quality to the wheat, which favours the attraction of the insects. The fields of this sort I have generally found to be rich gravelly loams; fine turnep and barley land.

In all other cases, I could never find variations of culture or manures to occasion any variations in respect to the mildew.

The position of corn will often cause great variations. Drilled wheat, for instance, has been mildewed through the centre of a field of broad-cast, all which has regularly escaped. I do not attribute this to the superior strength of vegetation in drilled corn, because manures that give even a greater strength will not do it; it must be a most unusual manuring: I apprehend it owing merely to the admission of a current of air, which, as it brings nourishment to the plants, may certainly bring a large portion of those particles and insects with which the air is charged.

These trials do not appear to that advantage which a number large enough to admit tables of averages would. But these sheets increase to such a bulk, that I must reject many.

EXPERIMENTS OF CURIOSITY.

In an extensive course of trials, many objects occur, either from design or accident, which cannot be arranged under regular heads: they are matters of amusement and curiosity; but the result is sometimes such, as to demand more attention than might at first be thought of. It is true, a great number will always be tried before few are found that are truly important; but experiments, even of this nature, are not to be at once rejected because they do not make discoveries of great consequence.

EXPERIMENT N° 21.

The first week in september 1765, I sowed a agrain of red Kentish wheat, in a small hillock of rich compost, watering it at different times according to the season. The middle of october I transplanted it, slipping it into five parts; each was planted in the centre of a square yard of well-dug and manured land, and watered sufficiently to insure their growth. They flourished greatly the ensuing winter. The end of march I slipped off thirteen shoots, with roots, from the five plants, which I planted in thirteen other yards of the same earth adjoining. They were all dug between once, and hoed several times. Each plant had a stick near it, with tape wound about the branches, just sufficient to keep them from beating down or breaking. It was the end of august before I reaped them; they were in perfect health, and made a most vigorous appearance. The product, two quarts one pint of very fine wheat.

To manage an acre of land upon the same principles, and yielding such a crop, would be attended with the loss of 27 *l.* 13 *s.* 6 *d.*

EXPERIMENT N° 22.

The first week in october 1765, I sowed a pound of good red wheat upon a rich soil; in march I transplanted the choicest of the plants along a ridge of well prepared land, that had been twice winter-ploughed. The season for transplantation was neither favourable nor unfavourable; but most of the plants failed. Whatever advantages may be supposed to arise from gaining time for fallowing, I am convinced, from this and other experiments, that transplantation will in no case answer.

EXPERIMENT N° 23.

In order to see how far the perfection of culture would carry the product of wheat; in june 1765, I marked a square perch, in field L*, and dug it out to the depth of one foot, throwing the moulds around it. The clods were immediately chopped fine, and all the heap passed through a wire sieve, the squares less than one fourth of an inch: the sifted earth was then mixed up with ten bushels of coal ashes. In july, the heap was mixed with five of rotten horse-dung. In august, it was again stirred over with two of pigeons dung. The middle of september, it was thrown into the hole, and spread equally. The first week in october, it was set with red wheat, three grains in a cluster, six inches square throughout the perch: no cluster failed: they all flourished prodigiously throughout the winter. In may, I drove down a stake at each corner, three feet high: at eighteen inches from the ground, a net (the meshes six inches square) was suspended over the corn, and fastened to the stakes, that the corn might

shoot through it, and be prevented from falling, in case of bad weather. It grew so fast, that, in a fortnight after, I added such another net, fixed to the tops of the stakes: both were presently hid by the growth of the wheat, which, notwithstanding some very bad weather, was nether bent nor broken. It escaped the mildew; nor was it at all blighted. In august, I reaped and threshed it. The produce, one peck, one gallon, and two quarts; or, *per* acre, eight quarters six bushels; a vast produce, in a year when all the crops of wheat in the neighbourhood fell so remarkably short; a circumstance which renders this quantity more than ten quarters in some years. The expence of cultivating an acre of land in this manner amounts to above 70 *l.* a strong proof, that vast crops may be gained at an immense loss; but the greatness of the product should teach us to imitate the culture upon a more compendious plan.

EXPERIMENT N° 24.

In july 1766, dug out a square perch in the same manner, and conducted it the same as Experiment N° 23. The product, two pecks of wheat, notwithstanding its having a slight mildew; or, *per* acre, ten quarters. I should however remark, that the grain was thin, and by no means in value so high as the average of the market price.

EXPERIMENT N° 25.

In may 1766, marked a square perch, in field L*, and dug it out two feet deep. Passed the moulds directly through the wire sieve, and threw them up in a heap in the middle of the perch. In june, mixed twenty bushels of coal ashes with it. The beginning of july, mixed it again, adding ten bushels of rotten farm-yard dung. The eighteenth of august, passed the whole again through the sieve, breaking all the pieces of dung, and mixing them with the moulds till they sifted easily; left the whole in a heap as before. The end of the same month, mixed it again, adding five bushels of lime, two of malt dust, and two of foot. The first week in september, sifted the whole over the perch equally. And the first week in october, planted it with clusters of wheat, three grains in each, at six inches square. It was netted like the preceding experiments. The product, two pecks, two quarts; or, *per* acre, eleven quarters two bushels. The expence of cultivating an acre, in the same manner, upwards of 200 *l.* Without stating particulars, it would be something extraordinary to assert the gaining a crop of above eleven quarters *per* acre of wheat, and yet losing above an hundred and seventy pounds an acre by it.

EXPERIMENT N° 26.

The first week in july 1766, marked a ridge of land that had been extremely well fallowed and trench-ploughed: it contained five square perches

perches of land: manured it with fifty bushels of coal ashes, mortar rubbish, and rotten dung, that had been well mixed. Between this time and the end of september, ploughed it in the trench manner (that is, twice in the same furrow every time) six times, and harrowed it five times. This culture I bestowed by way of imitation of the perfect treatment mentioned above: I left it in most excellent order. The middle of october, planted it with clusters of wheat, three grains in each, at six inches asunder. In december, sowed over it five bushels of malt dust. In april strained a net over it, eighteen inches from the ground: and the end of may, another eighteen inches above that. It escaped all damage and accidents, and was reaped the end of august. The produce, two gallons, one pint and a half; or, *per acre*, five quarters, three bushels, and three pecks. The expences, *per acre*, about 25/.

SECT.

S E C T. VII.

GENERAL REMARKS on the CULTURE of WHEAT.

PERHAPS agriculture offers a more extensive field for experiment than any other branch of natural philosophy; and, most certainly, no series of trials require a larger expence, or a more unremitted attention: the latter I have been able to give; but the former, in its full extent, was far beyond my fortune. In the course of the preceding trials, I had views opened upon me, which to pursue were very tempting: the more experiments a man tries, the more will remain for him to try. Each step in husbandry leads to a new one; and, if the paths were followed, probably worlds would be penetrated, now unthought of. For these reasons, in these trials, as well as in those which succeed, the reader should not condemn me, when he observes some small discoveries not pursued in the following years with that spirit he might expect.

From these experiments on wheat, the culture appears to be a matter of much nicety: an incomplete cultivation is evidently very unprofitable; but less so than a perfect one: it is a vegetable that will not pay great expences.

In point of quantity, the product has been carried much higher than ever known in the common farmer's management. This point is a very important one: it should be discovered on many accounts to what a height products can be carried, for they discover the nature of the vegetable; it then remains for many series of trials, to apply improved common management in the room of more expensive practices. From the weight of expence, several very great crops in these minutes left but a small profit; yet the improved husbandry was seven times more advantageous than the common management. What a field is this for future enquiries, to discover the point of fertility the most advantageous to wheat on given soils!

The new husbandry is in these experiments proved to be a profitable practice: but I may here remark, and perhaps with greater propriety than in another place, that I am confident, no common farmer ever can or will manage it: the imperfection of the instruments, and the accuracy of the culture, are both beyond them.

The comparison of the two methods proves, that on these soils the old husbandry is the superior mode: this I consider as a most fortunate circumstance, as the new could never become general. I do not think the product in that method has been by any one carried higher than myself: 5 quarters *per acre*, from double rows on five-foot ridges, is a very great crop; but I have reaped it more than once.

Some writers have of late much condemned wide intervals:—the narrower they are, the more complex is the husbandry, and the greater nicety is requisite in horse-hoeing; nor is it possible to execute that operation so effectually in a narrow as in a wide interval: and yet, the narrower the space, the nearer we approach to the equally distant rows, which yields more than any method. In the comparative trials, narrow intervals beat the wide ones; but then I have never in general attempted horse-hoeing in less than 3 feet intervals. A horse, I am sensible, will walk in a very narrow space: but that is not the question; the corn must not be trod upon, which it will be when the path of the horse is taken for a guide: nor must the horse-hoeing be a business of such delicacy, that not one servant in ten can execute it.

The increase of the quantity of wheat is an object of vast importance, while exportation is allowed: and from these experiments there is much reason to believe, that the most rational method of effecting this end is to promote general good husbandry, and particularly the raising large quantities of manure. The poverty of most of my common crops has been owing to my forming so much yard-dung into composts, with design to spread them on the land when thoroughly rotten and well mixed: when these had come to be spread, the farm would in general have been brought into better heart, and the crops consequently more considerable. From their being poor, we plainly see (allowing for the extreme unfavourableness of the seasons) that wheat should either be cultivated on land in good heart, or not at all.

The profit of this grain succeeding ameliorating ones, *viz.* beans, clover, &c. appears very clear; and is a national object of no slight importance.

One of the objects of the greatest consequence, that demands a particular attention from future cultivators, is the assigning small spots of land in various soils, for trying the perfection of husbandry in every variation, from *excellent* common management, to the height of every particular of pulverization and manuring. This, in a great variety, would yield points of knowledge, that would be attended with many very happy circumstances: but the expence, even of small trials of this sort, is very great.

CHAP. II.

OF BARLEY.

THE experiments I have made on this grain are of the same nature as those on wheat; they will therefore be arranged under the same heads; those of culture and produce in the old method—in the new—the comparison—the time of sowing—quantity of seed—and miscellaneous trials, not to be classed under any of the other heads.

S E C T. I.

CULTURE and PRODUCE in the old method.

THE foil of this farm is not a capital one for barley; in the common farmers management, the crops in this neighbourhood are seldom great: the very rich crumbling clays excepted, barley thrives best on sound gravelly loams. I should also add in general, that these years were not reckoned favourable to the production of that grain.

EXPERIMENT N^o 1.

Culture, expences, and produce, of 11 acres, field T, 1764.

CULTURE.

This field was part of the farm I took at lady-day 1763, the fallow year, intended for wheat at michaelmas; but the season not proving advantageous, I ridged it up during the winter for spring corn. In 1759, it was sown with barley; in 1760, oats; in 1761, clover; in 1762, wheat.

EXPENCES.		£.	s.	d.
Six ploughings,	- - - - -	3	6	0
Water-furrowing,	- - - - -	0	15	0
5 quarters 4 bushels feed, at 20s.	- - - - -	5	10	0
Harrowing once,	- - - - -	0	1	6
Mowing,	- - - - -	0	12	10
Harvesting,	- - - - -	0	12	0
Threshing 23 qrs. 3 bushels,	- - - - -	1	6	0
		<hr/>	<hr/>	<hr/>
		12	3	4
Rent, &c. two years,	- - - - -	9	7	0
		<hr/>	<hr/>	<hr/>
		21	10	4

PRODUCE.

22 qrs. at 19 s.	-	-	-	-	-	-	£.	s.	d.
1 ditto, 3 bushels screenings,	-	-	-	-	-	-	20	18	0
							0	13	0
							<hr/>		
Expences,	-	-	-	-	-	-	21	11	0
							21	10	4
							<hr/>		
Profit,	-	-	-	-	-	-	0	0	8
							<hr/>		
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	4	19	0
Harrowing,	-	-	-	-	-	-	0	2	9
Carting in harvest,	-	-	-	-	-	-	0	3	5½
							<hr/>		
The above profit,	-	-	-	-	-	-	5	5	2½
							0	0	8
							<hr/>		
Loss, 9s. 6d. per acre,	-	-	-	-	-	-	5	4	6½
							<hr/>		

OBSERVATIONS.

This crop amounted only to 2 qrs. 1 bushel *per* acre: double that quantity was the least I had reason to expect, considering it had a year and half of clean fallow, receiving 6 ploughings. The sowing was finished the 13th of may, and the harvesting the 22d of september. The excessive wetness of the summer ruined the crop on the flat part of the field; so that in june, near 4 acres of it were absolutely dead, the stalks of a dark brown colour, quite shrivelled up. This part of the field was not sufficiently water-furrowed, as I imprudently trusted too much to the season, on account of its being sown so late. Had the crop been wheat, it might have been advantageous; for then, well-funk water-furrows would have been dug; and as wheat bears the wet much better than spring corn, the crop would doubtless have been profitable. After harvest, the dark brown colour of the stubble enabled me to perceive distinctly the wet parts of the field: I therefore took the opportunity of tracing out some hollow drains through all those low parts, the digging and filling up of which employed two labourers a great part of the succeeding winter. Had this work been done the winter before, the single crop of barley would have more than paid me the expence. Where the wet had not ruined the crop, there was straw enough for 4 or 5 qrs. *per* acre, but the ears were short and thin.

EXPERIMENT N^o 2.

Culture, expences, and produce, of a rood, field L*, 1764.

CULTURE.

This piece was first ploughed in autumn 1762; from thence to michaelmas 1763, it received eight clean earths; was twice rolled, and three times harrowed. The last ploughing threw it on to ridges for the winter, and turned

in 5 cart loads of rotten farm yard-dung, that had been turned over several times; and it was left well water-furrowed. In march, ploughed it twice more, and the first week in april again, and harrowed in 3 pecks of barley-feed. It was mown in august. The product, 1 qr. 5 bushels.

EXPENCES.						£.	s.	d.
Eleven ploughings,	-	-	-	-	-	0	2	9
Five harrowings,	-	-	-	-	-	0	0	7
Two rollings,	-	-	-	-	-	0	0	0½
Manuring,	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	1	8
Mowing and harvesting,	-	-	-	-	-	0	0	8
Threshing,	-	-	-	-	-	0	2	0
Rent,	-	-	-	-	-	0	8	6
						0	18	5½

PRODUCE.						£.	s.	d.
1 qr. 5 bushels, at 20s.	-	-	-	-	-	1	12	6
Expences,	-	-	-	-	-	0	18	5½
Profit, 2l. 16s. 2d. per acre,	-	-	-	-	-	0	14	0½

						£.	s.	d.
Ploughing,	-	-	-	-	-	0	4	1½
Harrowing,	-	-	-	-	-	0	0	3¾
Rolling,	-	-	-	-	-	0	0	0¼
Manuring,	-	-	-	-	-	0	1	0½
Carting in harvest,	-	-	-	-	-	0	0	0¾
						0	5	6¼
Clear profit, 1l. 13s. 11d. per acre,	-	-	-	-	-	0	8	5¾

OBSERVATIONS.

This crop is in quantity reckoned an extraordinary one in common management; it is not gained once in an hundred times: and yet here is no exertion of uncommon husbandry; nothing but common practices united. The case is, the farmers think a summer fallow alone is a great matter, and have little idea of manuring the same year: their notions tell them, that the ploughing does for one field, and the manuring for another; but this trial shews, that it is more profitable to exert every principle of good husbandry upon the same land, as most of the expences are the same to a great crop as to a small one. This was an unfavourable season for barley, or the product would doubtless have been greater.

EXPERIMENT N^o 3.

Culture, expences, and produce, of a rood, field M*, 1764.

CULTURE.

This piece was also fallowed: from the autumn of 1762, to the michaelmas 1763, it had received six ploughings and three harrowings; and was twice manured, once with 6 loads of rotten farm-yard dung, and once with coal-ashes and mortar rubbish mixed together, 4 loads. It was ploughed again the first week in march, and the end of the same month ploughed and sowed with 1 bushel of barley, and harrowed fine. The succeeding summer it was once hand-weeded. Product, 2 qrs. 1 bushel.

EXPENCES.

	£.	s.	d.
Eight ploughings, - - - - -	0	2	0
Five harrowings, - - - - -	0	0	7
First manuring, - - - - -	0	2	6
Cost of the second, and labour, - - - - -	0	18	0
Seed, - - - - -	0	2	6
Mowing and harvesting, - - - - -	0	0	8
Threshing, - - - - -	0	2	10

Rent, &c. - - - - -

1 9 1
0 8 6

1 17 7

PRODUCE.

	£.	s.	d.
2 qrs. 1 bushel, at 20s. - - - - -	2	2	6
Expences, - - - - -	1	17	7
Profit, 19s. 8d. per acre, - - - - -	0	4	11

	£.	s.	d.
Ploughing, - - - - -	0	3	0
Harrowing, - - - - -	0	0	3 $\frac{3}{4}$
Manuring, - - - - -	0	14	3 $\frac{1}{2}$
Carting in harvest, - - - - -	0	0	0 $\frac{3}{4}$

0 17 8

The above profit, - - - - -

0 4 11

Loss, 2l. 11s. per acre, - - - - -

0 12 9

OBSERVATIONS.

It is very remarkable, that so many noble crops upon a small scale should be gained to an almost certain loss. Notwithstanding this circumstance, I must

must be allowed to consider these trials as extremely useful: they teach us to give no credit to the amazing stories we hear of vast profit from vast crops, inasmuch that it perhaps is a chance whether nine out of ten of the very extraordinary crops are not losing ones. But the reader certainly understands me here to mean only those that are raised by an expensive manuring. The cheapest of all manures are those which the farmer raises himself. I shall in this work minute the expences of farm-yard dung; but as it is impossible to do it with accuracy, I charge it only at the labour bestowed on it: in any method, it is much cheaper than purchased manures. The reason of this crop, and many very great ones of wheat, proving unprofitable, is owing to the price of the manure purchased; it comes so heavy, that one crop must be immense to pay it.

Let it however be observed, that what I here remark is applicable only to the *first* crop; this proves nothing against the *general* profit of manuring: for such ample improvements will undoubtedly last many crops, and probably leave the land always the better for them; which is an advantage not altogether susceptible of calculation; although I shall attempt it in these sheets, by drawing general comparisons between fields differently managed: the great profit of rich manuring will then clearly appear.

EXPERIMENT N^o 4.

Culture, expences, and produce, of a rood, field L*, 1764.

CULTURE.

This piece was also fallowed from the autumn of 1762, when it was ploughed on to the ridge; it was stirred twice more by the middle of april, the latter of which turned in 4 loads of farm-yard dung, that had been well mixed together, and pretty rotten. It was designed for white oats; but changing my mind, I ploughed it again in may. The fifth earth was given in june, turning in 4 loads more of the same manure. In july the sixth was given. In august and september, the seventh and eighth. In october, spread over 4 loads more of this manure, turning it on to the ridge for winter. The end of march, ploughed and sowed it with 1 bushel of barley. No crop could flourish in a finer manner; but the beginning of july it was much beaten down, but not flat. It was cut in august, and threshed immediately: the produce, 2 qrs. 5 bushels, and 1 peck.

EXPENCES.

	£.	s.	d.
Ten ploughings,	-	-	6
Two harrowings,	-	-	3
Three manurings,	-	6	0
Seed,	-	2	6
Carried over,	0	11	3

					£.	s.	d.
Brought over,					0	11	3
Water-furrowing,					0	0	6
Mowing and harvesting,					0	0	10
Threshing,					0	2	9
Rent, &c.					0	15	4
					0	8	6
					1	3	10
					£.	s.	d.
2 qrs. 5 bushels, 1 peck, at 20s.					2	13	1
Expences,					1	3	10
Profit, 5 <i>l.</i> 17 <i>s.</i> per acre,					1	9	3
					£.	s.	d.
Ploughing,					0	3	9
Harrowing,					0	0	1½
Manuring,					0	2	6
Carting in harvest,					0	0	¾
					0	6	5¾
Clear profit, 4 <i>l.</i> 10 <i>s.</i> 7 <i>d.</i> per acre,					1	2	7¾

OBSERVATIONS.

This produce is above 10½ qrs. which is so very great, that it proves how able even this poor brick-earth soil is to yield large crops, when much assisted with manure. The crop without the manure, and only prepared for by fallowing, would have been 3 or 4 qrs. per acre. I am convinced by this experiment, that the utility of manuring this land is immense, and the profit of it very great, when the manure is raised at home.

Ten quarters, and even more, have been raised in the common management, many times, in different parts of England; but the soil of such fields have been peculiarly adapted to this grain, and most plentifully manured: and I apprehend it has been in seasons remarkably favourable. The barley of this trial was good; I have seen weightier grain, but it sold for 20*s.* a quarter without difficulty. The great success of the experiment determines me to vary them in future years, and to see to what a pitch the culture can be carried.

EXPE-

EXPERIMENT N^o 5.

Culture, expences, and produce, of $3\frac{1}{2}$ acres, part of field R, 1765.

CULTURE.

It was cropped with turneps in 1764; after which the land was ploughed up between the 16th of march, 1765, and the 18th of april; harrowed it the 3d of may, and by the 6th finished the second ploughing, sowing, and harrowing of it: 2 qrs. of seed used. The weather was extremely fine and favourable till the 9th, when a prodigious heavy shower fell, which was succeeded by very dry cold winds—few showers—and afterwards throughout the summer a severe drought, which appeared almost to burn up the crop in question: clover was sown on it, which made this year no appearance.

EXPENCES.

	£.	s.	d.
Ploughing,	0	7	0
Harrowing and sowing,	0	5	0
2 qrs. of seed,	1	18	9
Harvesting,	0	17	8
Threshing 8 qrs.	0	10	0
	<hr/>		
	3	18	5
Rent, &c.	2	18	6
	<hr/>		
	6	16	11

PRODUCE.

	£.	s.	d.
8 qrs. at 24s.	9	12	0
Expences,	6	16	11
	<hr/>		
Profit, 15s. 8d. per acre,	2	15	1
	<hr/>		
Ploughing,	0	3	6
Harrowing,	0	2	7 $\frac{1}{2}$
Carting in harvest,	0	1	10 $\frac{3}{4}$
	<hr/>		
	0	8	0 $\frac{1}{4}$
Profit, 13s. 5d. per acre,	2	7	0 $\frac{3}{4}$

OBSERVATIONS.

The crop is rather better than 2 qrs. 2 bushels *per* acre; which, considering the soil and the culture, particularly following turneps, is a very poor one: but if we reflect on the severe drought which almost parched the earth, it is as much as I had reason to expect, and from the appearance of it towards harvest, more than I *did* expect.

Culture, expences, and produce, of a rood, field L*, 1765.

CULTURE.

This piece was ploughed the first time in autumn 1763. It was stirred again in march 1764, and harrowed. The first week in april manured it with 4 loads of compost, coal-ashes, mortar rubbish, and other town manure. Ploughed it in, and harrowed it. In June, ploughed it for the fourth time. In July, two more earths. In august, one; and manured it with 4 loads of rotten farm-yard dung. In september, stirred it the eighth time: in october, the ninth; in november, the tenth; throwing it on to the ridge. The middle of april, sowed it with 1 bushel of barley, and at the same time manured it with 10 bushels of malt dust, ploughing both in by the eleventh earth, and so left it without harrowing, being garden fine. The following summer was so remarkably dry, that no weeds arose, notwithstanding the quantity of the manures. It was reaped in august: the product threshed in the field, 2 qrs.

EXPENCES.

	£.	s.	d.
Eleven ploughings,	0	2	9
Two harrowings,	0	0	1
First manuring, cost, and labour,	1	3	6
Labour in the second,	0	1	3
Cost, and ditto of the third,	0	10	7
Water-furrowing,	0	0	6
Seed and sowing,	0	2	6
Mowing and harvesting,	0	0	11
Threshing,	0	2	8
	2	4	9
Rent, &c.	0	8	6
	2	13	3

PRODUCE.

2 qrs. at 19s. 6d.	1	19	0
Loss, 2l. 17s. per acre,	0	14	3
	£.	s.	d.
Ploughing,	0	2	9
Harrowing,	0	0	1
Manuring,	0	12	8½
Carting in harvest,	0	0	1½
	0	15	8
Total loss, 5l. 19s. 8d. per acre,	1	9	11

OBSER-

This crop, though a very noble one, is not so great as I expected from the success of the preceding ones: but I attribute the produce being no greater to the extreme dryness of the season, which, meeting with such a hot manuring, were too powerful for the crop. So fine a one as eight qrs. per acre being so very unprofitable, is a fresh proof that a farmer is not to expect being repaid the expence of very rich manurings the first year, unless he raises them himself.

EXPERIMENT N° 7.

Culture, expences, and produce, of a rood, field M*, 1765.

CULTURE.

This piece was begun to be fallowed in autumn 1763. By the end of april 1764, it had been ploughed three times more, and twice harrowed; and also manured with 4 loads of compost, coal-ashes, mortar rubbish, and town dung. It was left thus till the end of may, that all the seeds of weeds might vegetate. A pretty plentiful crop of them was ploughed in the first week in june; the end of the same month stirred it again for the sixth time. In july, gave it the seventh earth. In august, the eighth. In september, manured it with 4 loads of farm-yard dung well rotted; and the end of the same month threw it on to the ridge by the ninth ploughing. In march, ploughed and sowed 1 bushel of barley, harrowing in at the same time 10 bushels of malt dust. It was mown and threshed in august: the product, 1 qr. 7 bushels.

EXPENCES.

	£.	s.	d.
Ten ploughings,	0	2	6
Two harrowings,	0	0	1
First manuring,	1	3	6
Second ditto,	0	1	3
Third ditto,	0	10	7
Seed, &c.	0	2	6
Mowing and harvesting,	0	0	11
Threshing,	0	2	6
Rent, &c.	0	8	6

2 12 0

PRODUCE.

1 qr. 7 bushels, at 19s. 6d.	1	16	6
Loss, 3l. 2s. per acre,	0	15	6

Loss brought over, - - -

£.	s.	d.
0	15	6

Ploughing, - - -

£.	s.	d.
0	2	0

Harrowing, - - -

0	0	1
---	---	---

Manuring, - - -

0	12	8½
---	----	----

Carting in harvest, - - -

0	0	1½
---	---	----

0	15	5
---	----	---

Total loss, 6*l.* 3*s.* 8*d.* per acre, - - -

1	10	11
---	----	----

OBSERVATIONS.

The loss of this experiment is a confirmation of what I remarked upon the last, that the heat of the season occasioned the crop being smaller than it would otherwise have been; for this rood yielded less than N° 6 in field L*, notwithstanding M* being so much a better barley soil: as the manuring is the same in both, we may certainly attribute the inferiority of M* to the heat of the season; the natural moisture of the clayey loam nourished the crop better than the gravelly loam. This trial is likewise another proof, that manures purchased, and amply applied, cannot be paid the first year.

EXPERIMENT N° 8.

Culture, expences, and produce, of a rood, field L*, 1765.

CULTURE.

This rood yielded turneps broad-cast in 1764, which were manured for in that complete manner sketched in so many of these experiments. It was ploughed twice in march, after the turneps were eat by sheep: again, the first week in april; the second week ploughed it again, and harrowed in a bushel of barley. This crop made an extreme fine appearance the whole season; was mown and threshed in august. The product, 3 qrs. 1 peck.

EXPENCES.

Four ploughings, - - -

£.	s.	d.
0	1	0

Two harrowings, - - -

0	0	1
---	---	---

Seed and sowing, - - -

0	2	6
---	---	---

Mowing and harvesting, - - -

0	0	10
---	---	----

Threshing, - - -

0	3	0
---	---	---

Rent, &c. - - -

0	4	3
---	---	---

0	11	8
---	----	---

PRO-

PRODUCE.					£.	s.	d.
3 qrs. 1 peck,	-	-	-	-	2	17	6
Expences,	-	-	-	-	0	11	8
					<hr/>		
Profit, 9 <i>l.</i> 3 <i>s.</i> 4 <i>d.</i> per acre,	-	-	-	-	2	5	10
					£.	s.	d.
Ploughing,	-	-	-	-	0	2	4 $\frac{1}{4}$
Harrowing,	-	-	-	-	0	0	2
Carting in harvest,	-	-	-	-	0	0	1 $\frac{1}{2}$
					<hr/>		
					0	2	8 $\frac{1}{4}$
					<hr/>		
Clear profit, 8 <i>l.</i> 12 <i>s.</i> 7 <i>d.</i> per acre,	-	-	-	-	2	3	1 $\frac{1}{4}$

OBSERVATIONS.

This trial is a very decisive one: the season has already been observed unfavourable to richly manured soils; but we find that when the manure is thoroughly incorporated with the earth, and rendered quite mild by laying near a year in the soil, and yielding a great crop of turneps, that it then is fuitable to produce large crops of corn, even in the hottest seasons; and with the strong assistance of feeding the turneps off with sheep, which is a most rich manuring. The profit of this crop is exceedingly great, and opens, for the first time, a view of the profit of rich manuring: for with this crop is only one year's rent; no expence of fallowing, nor any of manuring; and yet it is equal to any that has been produced: and, what is of the most consequence, the land left in admirable order for succeeding crops; insomuch that there is no doubt of a field in such fine heart producing ample ones without further expence, for several years. Supposing the profit of the second year to pay the loss of the first in such experiments, the profit will, upon the whole, be very great.

EXPERIMENT N^o 9.

Culture, expences, and produce, of a rood, field M*, 1765.

CULTURE.

Yielded broad-cast turneps in the year 1764, completely cultivated: they were fed off the land by sheep the end of february, and sown with barley the beginning of april on three ploughings; the quantity of seed, 1 bushel. It was mown and threshed in august: the product, 2 qrs. 7 bushels.

EXPENCES.

					£.	s.	d.
Three ploughings,	-	-	-	-	0	0	9
Two harrowings,	-	-	-	-	0	0	1
Seed and sowing,	-	-	-	-	0	2	6
Mowing and harvesting,	-	-	-	-	0	0	10
Threshing,	-	-	-	-	0	2	10 $\frac{1}{2}$
					<hr/>		
Carried over,	-	-	-	-	0	7	0 $\frac{1}{2}$

Brought over,
Rent, &c.

£. s. d.
0 7 0½
0 4 3

0 11 3½

PRODUCE.

2 qrs. 7 bushels, at 19s.
Expences,

£. s. d.
2 14 7½
0 11 3½

Profit, 8l. 13s. 4d. per acre,

2 3 4

Ploughing,

£. s. d.
0 1 9½

Harrowing,

0 0 2

Carting in harvest,

0 0 1½

0 2 1

Clear profit, 8l. 5s. per acre,

2 1 3

OBSERVATIONS.

This noble crop is a fresh proof of the excellency of rich manured turneps as a preparation for barley: the profit is very considerable, such as is never reaped in the common husbandry. The inferiority of it to that of field L*, though small, may be owing to the soil being so much hotter; and the crop so dry a year being so considerable, shews that the richest manuring, when cooled by a year's age, and the yielding a large crop of turneps, is not too potent for barley, even in the hottest year.

EXPERIMENT N° II.

Culture, expences, and produce, of 11 acres, field P, 1766.

CULTURE.

Turneps in 1765, on a very complete fallow, but they failed; ploughed up the land between the 19th of march and the 17th of april. The 19th harrowed it twice. The 29th a second time; and on the two following days ploughed and harrowed in the seed on 4 acres, but could not go on for rain, as this was much dryer than the rest of the field. The 5th of may rolled them. The 6th and 7th finished ploughing the field. The 9th finished harrowing in the seed, 2 bushels per acre. The exceeding heavy rains, which fell the 10th, 11th, and 12th, with five following hot days, incrusted the surface; and, as I had not sown the last part with grass-seeds, I determined to harrow it again, to let the blade through: this I performed the 17th, the ground being until then too wet within to bear the horses, sowing clover-feed before the harrows. The part sown with this grass was much

much damaged by it. Mowed the crop august 30th. Carried it september 6th to 27th. February 1767, threshed the 4 acres first sown; produced 11 qrs. of barley. In may threshed the rest: the amount, 14 qrs. 1 bushel; total, 25 qrs. 1 bushel.

EXPENCES.

	£.	s.	d.
Two clean earths,	1	2	0
Five harrowings,	0	12	9
One rolling,	0	1	0
2 qrs. 6 bushels of seed, at 24s.	3	6	0
Sowing,	0	2	9
Water-furrowing,	0	6	2
Mowing,	0	12	10
Harvesting,	0	17	2
Harvest-men's malt,	0	8	3
Threshing,	1	10	3
Expences, &c.	0	13	0
Rent, &c.	9	7	0
	18	19	2

PRODUCE.

	£.	s.	d.
25 qrs. 8 bushels barley,	29	15	3
Expences,	18	19	2
Profit, 19s. 7d. per acre,	10	16	1
	£.	s.	d.
Ploughing,	2	9	0½
Harrowing,	1	0	7½
Rolling,	0	0	5½
Carting in harvest,	0	5	11½
Carrying out one journey,	0	15	6¼
	4	11	7¾
Profit, 11s. 3¼d. per acre,	6	4	5¾

OBSERVATIONS.

In this field, like many others, the crop proved but indifferent, and undoubtedly owing to the extreme wetness of the season, since the land was in good heart; for the clover rising so strong, is scarce ever owing to any other cause. It is remarkable, that the four acres not sown with clover produced above a third more *per* acre than the latter; but then candour requires one to remember the superiority of the soil of this part of the field, which is dryer and better barley-land than the seven acres, and would consequently, in so wet a season, without the distinction of artificial

cial grafs, have produced a better crop than the reft of the field. Hence results the impossibility of determining the damage by the clover; but, from my eye, I judge it to be confiderable.

This circumstance, among a thoufand others, fhews how accurately every variation of foil in the fame field fhould be obferved when experiments are carrying on: a writer who omits this neceffary attention, muft have deceived himfelf, and will certainly deceive his readers. Decifive confequences are much the moft brilliant in the experimental page; but any point had far better be left in a ftate of uncertainty, and even darknefs, than facrifice accuracy and truth to the vanity of compofition.

The fmallnefs of the quantity of feed ufed in this field (as in the reft fown this feafon) might operate over the whole; and I am inclined to think it did.

EXPERIMENT N^o 12.

Culture, expences, and produce, of 4 acres, field Q, 1766.

CULTURE.

Ploughed up the oat ftubble the 24th, &c. of january, 1765. The 15th of may, turned the furrows back, and harrowed it. June 1ft, ploughed it again. The 4th, rolled and harrowed it. The 18th, harrowed it again. The 21ft, ploughed it again. The 24th, rolled it. Auguft 15th, ploughed it again. The 17th, harrowed it. October 29th, began to throw it on to the ridge for the winter, but wet weather prevented my doing more than 2 acres; the reft laid flat till fpring, and even without any water-furrows. April 21ft and 22d, ploughed it up, working extremely mellow and fine, and harrowed in 2 bufhels of barley *per* acre. The 23d, fowed 54 lb. clover-feed over it, and the next day harrowed it acrofs. An exceeding heavy rain coming before I dug the water-furrows, put me in pain for the crop: the land was rendered fo wet, that it was fome days before the men got on to dig them. As it was to lay with clover, I ftruck 80 perch of furrows, which were dug 8 inches deep, and were of infinite fervice in the very heavy rains which fucceeded. The wet weather continued fo inceffantly, that the clover by the 19th of may appeared every where exceeding thick, and threatened to over-power the barley. Mowed it the 27th of auguft. Carried it feptember 12th. Finished the threshing january 17th. Produce, 7 qrs. 5 bufhels, and 5 bufhels screenings and offal.

EXPENCES.						£.	s.	d.
Six clean earths,	-	-	-	-	-	1	4	0
One ditto 2 acres,	-	-	-	-	-	0	2	0
Seven harrowings,	-	-	-	-	-	0	5	9
Two rollings,	-	-	-	-	-	0	1	6
Carried over,	-	-	-	-	-	1	13	3

						£.	s.	d.
Brought over,	-	-	-	-	-	1	13	3
1 qr. 1 bushel of seed,	-	-	-	-	-	1	7	0
Sowing,	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	0	3	4
Mowing,	-	-	-	-	-	0	4	8
Harvesting,	-	-	-	-	-	0	6	5
Harvest-men's malt,	-	-	-	-	-	0	3	0
Threshing, at 2s. a qr.	-	-	-	-	-	0	16	6
Expences carrying out,	-	-	-	-	-	0	9	7
						<hr/>		
Two years rent, &c.	-	-	-	-	-	5	4	9
						6	16	0
						<hr/>		
						12	0	9

PRODUCE.

						£.	s.	d.
7 qrs. 5 bushels, at 27s.	-	-	-	-	-	10	5	10
5 bushels of screening,	-	-	-	-	-	0	10	0
						<hr/>		
						10	15	10
						<hr/>		
Loss, 6s. 3d. per acre,	-	-	-	-	-	1	4	11

						£.	s.	d.
Ploughing,	-	-	-	-	-	3	2	2½
Harrowing,	-	-	-	-	-	0	10	6
Rolling,	-	-	-	-	-	0	0	4
Carting in harvest,	-	-	-	-	-	0	2	2
Carrying out one journey,	-	-	-	-	-	0	15	6½
						<hr/>		
						4	10	9½
						<hr/>		
Loss, 1l. 8s. 11d. per acre,	-	-	-	-	-	5	15	8½

OBSERVATIONS.

This crop was entirely ruined by the clover: I before remarked the threatening appearance it made in may; but long before harvest it had, in most parts of the field, quite got the better of the barley, infomuch that, in many places, the field looked as if cropped with it alone. Had it not been for this damage, the goodness of the soil and the strength of a year's fallow would have thrown out a much larger crop, notwithstanding the unfavourableness of so wet a season. That part which was thrown on to the ridge with a ploughing extraordinary, was no better than the rest; of which circumstance, more under the article *Tillage*. It should be further remarked, that the small quantity of seed (*viz.* 2 bushels per acre) *might* be one cause of the

the smallness of the crop, as it is by no means clear that 3 or 4 bushels is not a properer quantity. I sowed 2 this year, in compliance with modern ideas.

EXPERIMENT N° 13.

Culture, expences, and produce, of 5 acres, field A*, 1766.

In 1759, fallow. In 1760, wheat. In 1761, fallow. In 1762, oats.
In 1763, fallow. In 1764, wheat. In 1765, fallow.

CULTURE.

Ploughed up the wheat-land in march 1765, and harrowed it. June 4th, rolled it with a large fallow-roller and 2 horses. Repeated it the 24th. In July ploughed it. August the 16th, harrowed it. The 29th, half-ploughed it. November 2d, threw part of it on to the ridge; the rest laid flat all winter, but the whole was exceeding well water-furrowed. May the 5th and 6th, ploughed it, and harrowed in 2 bushels barley *per* acre. The land worked extremely mellow and fine; better than that which had been stirred once or twice; which was occasioned by the great quantity of rain that fell about that time. The 9th, sowed over the barley 56lb. of trefoile, but could not get on to harrow or roll it. Mowed it september 12th: carried it the 24th. Produce, 8 qrs. and 2 qrs. screenings, &c.

EXPENCES.

						£.	s.	d.
Ploughing,	-	-	-	-	-	1	2	3
Harrowing,	-	-	-	-	-	0	3	6
Rolling,	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	0	6	4
Ditto the second time,	-	-	-	-	-	0	6	4
1 qr. 2 bushels seed,	-	-	-	-	-	1	10	0
Sowing,	-	-	-	-	-	0	1	3
Mowing,	-	-	-	-	-	0	5	10
Harvesting,	-	-	-	-	-	0	9	7
Harvest-men's malt,	-	-	-	-	-	0	3	5
Threshing,	-	-	-	-	-	1	1	0
Marketing,	-	-	-	-	-	0	4	9
						<hr/>		
						5	16	0
Two years rent, &c.	-	-	-	-	-	8	10	0
						<hr/>		
						14	6	0

PRODUCE.

						£.	s.	d.
8 qrs. barley, at 25s. 6d.	-	-	-	-	-	10	4	0
2 ditto screenings, &c.	-	-	-	-	-	1	4	0
						<hr/>		
						11	8	0
						<hr/>		
						Expences,		

						£.	s.	d.
Expences,	-	-	-	-	-	14	6	0
Produce,	-	-	-	-	-	11	8	0
Loss, 11s. 7d. per acre,	-	-	-	-	-	2	18	0
						£.	s.	d.
Ploughing,	-	-	-	-	-	2	12	8½
Harrowing,	-	-	-	-	-	0	5	7½
Rolling,	-	-	-	-	-	0	0	7½
Carting in harvest,	-	-	-	-	-	0	2	8½
						3	1	8
Loss, 1l. 3s. 11d. per acre,	-	-	-	-	-	5	19	8

OBSERVATIONS.

As trefoile by no means has the bad effects of clover in spoiling crops of spring corn, I can attribute the poorness of this produce only to the excessive wetness of the season; a cause sufficiently powerful to account for the worst that ever was raised, when flat and naturally wet soils are in question. The quantity of seed might however be too small, as remarked in the register of N° 4. The quantity of straw was very considerable, above 2½ loads per acre; which is some reason for supposing that the land was in heart sufficient for yielding a beneficial crop, had the season been favourable.

EXPERIMENT N° 14.

Culture, expences, and produce, of 3 acres, field Z, 1766.

CULTURE.

September the 4th, 1765, ploughed up the tare stubble. November 14th and 15th, threw it on to the ridge. April 17th, ploughed it again. May 9th, ploughed it, and harrowed in 2 bushels barley per acre. The exceeding heavy rains which fell that night and the following days, prevented my water-furrowing it; so that I had scarce any hope of a crop. The hot sun we had on the 14th, and three following days, baked the surface; but the rain the 19th just let it through, not however without making the land quite parching again. Mowed it september 19th; carried it the 26th. Produce, 2 qrs. 1 bushel; 1 qr. 4 bushels best; the rest screenings.

						£.	s.	d.
4 clean earths,	-	-	-	-	-	0	12	0
Harrowing,	-	-	-	-	-	0	0	6
Rolling,	-	-	-	-	-	0	0	4
Water-furrowing,	-	-	-	-	-	0	3	0
Carried over,	-	-	-	-	-	0	15	10

							£.	s.	d.
Brought over,	-	-	-	-	-	-	0	15	10
6 bushels of seed,	-	-	-	-	-	-	0	18	0
Sowing,	-	-	-	-	-	-	0	0	9
Mowing,	-	-	-	-	-	-	0	8	6
Harvesting,	-	-	-	-	-	-	0	3	6
Harvest-men's malt,	-	-	-	-	-	-	0	2	3
Threshing,	-	-	-	-	-	-	0	4	6
							2	8	4
Rent, &c.	-	-	-	-	-	-	2	11	0
							4	19	4

PRODUCE.

							£.	s.	d.
1 qr. 4 bushels barley, at 26s.	-	-	-	-	-	-	1	19	0
5 bushels screenings,	-	-	-	-	-	-	0	7	0
							2	6	0
Loss, 17s. 9d. per acre,	-	-	-	-	-	-	2	13	4

							£.	s.	d.
Ploughing,	-	-	-	-	-	-	1	8	9
Harrowing,	-	-	-	-	-	-	0	1	1½
Rolling,	-	-	-	-	-	-	0	0	1½
Carting in harvest,	-	-	-	-	-	-	0	1	7½
							1	11	7½
Loss, 1l. 8s. 3½d. per acre,	-	-	-	-	-	-	4	4	11½

OBSERVATIONS.

The same circumstances of season and seed before mentioned, are to be remembered here; but this being a second crop, and the land poorer than that of the preceding experiments, accounts for the product being so much smaller.

EXPERIMENT N° 15.

Culture, expences, and produce, of 7 acres, field Y, 1766. September 24th, 1765, ploughed up the pea stubble. November 11th, threw it up for the winter. 1766, april 21st, stirred it again. May 8th, harrowed the ridges. The 23d, carried on 5 waggon loads of curriers shavings, and spread them over 2 acres of it. The 24th, &c. ploughed; sowed 3 bushels per acre, and harrowed it. Mowed it september 19th. Carried the 25th. Product, 8 qrs. 4 bushels of the best; and 2 qrs. 1 bushel of screenings.

EXPENCES.

EXPENCES.

	£.	s.	d.
Four clean earths,	1	8	0
Twice harrowed,	0	4	6
Water-furrowed twice,	0	7	0
21 bushels of seed,	3	3	0
Sowing,	0	1	9
Cutting thistles,	0	8	9
Mowing,	0	8	2
Harvesting,	0	12	9
Threshing,	1	2	3
Marketing,	0	4	0

Rent, &c.	8	0	2
	5	19	0
	13	19	2

PRODUCE.

	£.	s.	d.
8 qrs. 4 bushels barley,	11	1	0
2 qrs. 1 ditto screenings,	1	3	0

Loss per acre, 4s. 9d.	12	6	0
	1	13	2

	£.	s.	d.
Ploughing,	3	7	1
Harrowing,	0	5	3
Carting in harvest,	0	3	9½
	3	16	1½

Total loss, 15s. 7½d. per acre,	5	9	3½
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OBSERVATIONS.

It would be tedious to repeat over and over again the wetness of this season, and yet it is necessary to mention it in every experiment: but the lateness of sowing this field was much against it; which circumstance induced me to sow a bushel of seed per acre extraordinary; but this addition, it is plain, either had no effect at all, or the late sowing more than counteracted it. I do not charge any part of the expence of the carriers shavings to this crop, as I imagine they take no effect the first season: I could not perceive any benefit accruing from them.

Culture, expences, and produce, of half an acre, part of field R, 1766.

CULTURE.

This piece of land had not only been trench-ploughed for carrots, but well stirred for burnet that followed; and enjoyed, though not a fallow by design, yet what was more than equal to the best, as commonly managed. May 2th, 1766, ploughed it, and harrowed in one bushel of barley. In the evening, a prodigious heavy shower: from the 13th to 18th, a warm sun, which baked the surface of this gravelly soil. Mowed it September 12th. Carried the 17th. Product, 1 qr. of the best, and 1 bushel screenings.

EXPENCES.

One earth,	£.	s.	d.
Harrowing,	0	0	6
Seed,	0	3	0
Sowing,	0	0	2
Mowing,	0	0	7
Harvesting,	0	0	6
Threshing,	0	2	0

Rent, &c.

	£.	s.	d.
	0	7	0
	0	8	6
	0	15	6

PRODUCE.

1 qr. of barley,	£.	s.	d.
1 bushel of screenings,	1	7	0
	0	1	6

Expences,

	£.	s.	d.
	1	8	6
	0	15	6

Profit per acre, 26s.

Ploughing,
Harrowing,
Carting in harvest,

Clear profit per acre, 1^l. 2s. 11^d.

OBSER-

Considering that this piece enjoyed the benefit of many ploughings, without their being charged to it, which necessarily increases the profit, the product is by no means equal to what might have been expected, had not the shower of rain above-mentioned done so much mischief, by baking the surface of the land. The benefit of deep ploughing can only be guessed at by this experiment. It is to be considered, that the 12th of May is very late for sowing this kind of soil; that it is doubtful whether the quantity of seed was not much too small: lastly, the heavy rain added much to these unfavourable circumstances, so that it is at least a question, whether a crop of 2 qrs. 2 bushels *per* acre would have been reaped, had it not been for the preceding culture. I have however no doubt, but that this land, in a favourable season, early sowed, and with a proper quantity, whatever that quantity is, would have yielded at the rate of 4 or 5 qrs. *per* acre.

EXPERIMENT N° 17.

Culture, expences, and produce, of a rood, field L*, 1766.

CULTURE.

This piece received its first ploughing in the autumn of 1764, when it was trench-ploughed, one plough following another in the same furrow, and left well water-furrowed for the winter. In March following it was ploughed and harrowed; and both operations repeated in April. In May, the fourth ploughing was given, and harrowed for the third time. The end of June, a full crop of various sorts of weeds was turned in by the fifth ploughing. In July it was stirred again; and in August the seventh was given. In September, the eighth; and it was thrown on to the ridge in October by the ninth. It was ploughed and sown in April with 1 bushel of barley. Mown and threshed in August. The product, 1 qr.

EXPENCES.

	£.	s.	d.
Eleven ploughings,	-	-	0 2 9
Four harrowings,	-	-	0 0 2
Seed and sowing,	-	-	0 2 6
Mowing and harvesting,	-	-	0 0 10
Threshing,	1 0 0	-	0 0 0
Rent, &c.	18 0 0	-	0 0 0
			<hr/>
			0 15 9

PRODUCE.

	£.	s.	d.
1 qr.	-	-	1 5 0
Expences,	-	-	0 15 9
			<hr/>
Profit, 2l. 14s. <i>per</i> acre,	-	-	0 9 3

[Ry 2]

	£.	s.	d.
Profit brought over,	0	9	3
Ploughing,	0	6	7
Harrowing,	0	0	4½
Carting in harvest,	0	0	1½
			<hr/>
	0	7	1
Clear profit, 8s. 8d. per acre,	0	2	2

OBSERVATIONS.

This rood was a trial of the efficacy of tillage. A trench-ploughing before the first winter of the fallow, and a thorough pulverization during the succeeding summer, is carrying tillage to as great a perfection as can be effected by common implements: the crop is a good common one, considering the year was no barley season; and its leaving profit, tho' small, is, in such a year, a favourable circumstance. The writers in favour of tillage have, in one respect, the better side of the argument: tillage is very cheap in comparison to most manures; but when they assert its superiority to manures, they run into all the extravagances of theory, *opposed* to practice.

EXPERIMENT N° 18.

Culture, expences, and produce, of a rood, field L*, 1766.

CULTURE.

Ploughed for the first time in autumn 1764, when it was thrown on to the ridge. In march 1765, it was manured with 4 loads of town-dung: by the 12th of august, it received four ploughings more. The first week in september, it was again manured with the same quantity of the same manure: and in october it was thrown on to the ridge for the winter; and in march was ploughed, sown with 1 bushel, and manured with 10 bushels of foot. In august, it was mown and threshed. The produce, 2 qrs. and 1 peck.

EXPENCES.

	£.	s.	d.
Seven ploughings,	0	1	9
One harrowing,	0	0	4½
Seed and sowing,	0	2	6
First manuring,	1	3	0
Second ditto,	1	3	0
Third ditto,	0	6	0
Water-furrowing,	0	0	6
Mowing and harvesting,	0	0	10
Threshing,	0	2	0
			<hr/>
Carried over,	2	19	7½

Brought over,	-	-	-	-	-	£.	s.	d.
Rent, &c.	-	-	-	-	-	0	8	6
<hr/>								
PRODUCE.								
Two quarters one peck, at 25 s.	-	-	-	-	-	2	10	9
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Loss, 3 l. 9 s. 6 d. per acre,	-	-	-	-	-	0	17	4

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£. s. d.								
Ploughing,	-	-	-	-	-	0	4	2½
Harrowing,	-	-	-	-	-	0	0	1
Manuring,	-	-	-	-	-	1	9	7
Carting in harvest,	-	-	-	-	-	0	0	1½
<hr/>								
Total loss, 10 l. 5 s. 5 d. per acre,	-	-	-	-	-	2	11	4½

OBSERVATIONS.

This trial is a fresh proof, that we must not look to the first crop of corn for a reimbursement of the expence of ample manurings. The expence of rich improvements of this sort is so very great, if the manure is purchased, that the crop must be immense to pay it; this of above 8 quarters per acre is attended with a loss of above ten pounds, which is so very great, that one can scarcely expect the next crop to pay it.

EXPERIMENT N° 19.

Culture, expences, and produce, of a rood, field L*, 1766.

CULTURE.

This piece yielded turneps in complete management, with respect both to tillage and manure, in 1765. They were drawn and carried off to cattle. The land was twice ploughed in march, and ploughed and sown the beginning of april, with 1 bushel of barley. It made an excellent appearance throughout the season, and was mown and threshed the middle of august. The product, 2 quarters.

EXPENCES.

Three ploughings,	-	-	-	-	-	£.	s.	d.
Two harrowings,	-	-	-	-	-	0	0	9
Seed and sowing,	-	-	-	-	-	0	0	1
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Carried over,	-	-	-	-	-	0	3	4

Brought over,						£.	s.	d.
Mowing and harrowing,						0	3	4
Threshing,						0	0	10
						0	2	0
Rent, &c.	-	-	-	-	-	0	6	2
						0	4	3
						0	10	5
PRODUCE.								
Two quarters,	-	-	-	-	-	2	10	0
Expences,	-	-	-	-	-	0	10	5
Profit, 7l. 18s. 4d. per acre,	-	-	-	-	-	1	19	7
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	1	9½
Harrowing,	-	-	-	-	-	0	0	2
Carting in harvest,	-	-	-	-	-	0	0	1½
Clear profit, 7l. 9s. 11d. per acre,	-	-	-	-	-	1	17	5½

OBSERVATIONS.

This is a very fine crop; more, I think, than there was reason to expect, considering the year's being so exceedingly wet, and the turneps being carried off the land; but manuring the soil in an extraordinary manner for turneps, is certainly excellent husbandry; for that crop mixes it so thoroughly with the land, that every particle is impregnated with riches for the succeeding crop. Thus we have hitherto found the crops of barley equal, after manured turneps, to those for which the manure was directly laid; and when the turneps are fed off with sheep, vastly superior; which gives no slight reason to suppose, that such a conduct of the manure is the most profitable of the two. This experiment is likewise a new proof, that the profit of excellent husbandry lies not in the first crop, but in getting the land into such excellent heart as to insure the farmer a crop, whatever he sows, and that without fallowing, and without fresh manuring, which, as expences are so low, must be almost clear profit.

EXPERIMENT N° 20.

Culture, expences, and produce, of a rood, field L*, 1766

CULTURE.

CULTURE.

This rood was cropped with horse-hoed beans in 1765. It was ploughed on to the ridge in november; again in march; a third time the beginning of april, and ploughed and sowed the end of the same month with 3 pecks of barley; mown and threshed in august. The product, 6 bushels.

EXPENCES.						£.	s.	d.
Four ploughings,	-	-	-	-	-	0	1	0
One harrowing,	-	-	-	-	-	0	0	0½
Seed and sowing,	-	-	-	-	-	0	2	6
Mowing and harvesting,	-	-	-	-	-	0	0	10
Threshing,	-	-	-	-	-	0	1	0
						<hr/>		
Rent, &c.	-	-	-	-	-	0	5	4½
						0	4	3
						<hr/>		
						0	9	7½

PRODUCE.						£.	s.	d.
Six bushels, at 24 s.	-	-	-	-	-	0	18	0
Expences,	-	-	-	-	-	0	9	7½
						<hr/>		
Profit, 1 l. 13 s. 6 d. per acre,	-	-	-	-	-	0	8	4½

	£.	s.	d.
Ploughing,	0	2	4½
Harrowing,	0	0	1
Carting in harvest,	0	0	1½
			<hr/>
Clear profit, 1 l. 3 s. 1 d. per acre,	0	5	9½

OBSERVATIONS.

This is much such a crop as I should have expected from a fallow; consequently it is as much as there was reason to expect from this piece; for, perhaps, horse-hoeing equals not a fallow, as a preparation. But that point will, in another place, be more particularly examined.

EXPERIMENT N° 21.

Culture, expences, and produce, of a rood, field M*, 1766.

CULTURE.

Yielded horse-hoed turneps in 1765, which were drawn for cattle in march. It then received three ploughings, and was sown with three pecks of

of barley the middle of april; mown and threshed in august. The product, 5 bushels 2 pecks.

EXPENCES.

	£.	s.	d.
Three ploughings, - - - - -	0	0	9
Harrowing, - - - - -	0	0	0
Seed and sowing, - - - - -	0	2	6
Mowing and harvesting, - - - - -	0	0	10
Threshing, - - - - -	0	0	11
Rent, &c. - - - - -	0	5	0
	0	4	3
	0	9	3

PRODUCE.

	£.	s.	d.
Five and $\frac{1}{2}$ bushels, at 24 s. 6 d. - - - - -	0	16	10
Expences, - - - - -	0	9	3
Profit, 1 l. 10 s. 6 d. per acre, - - - - -	0	7	7
Ploughing, - - - - -	0	1	9
Harrowing, - - - - -	0	0	1
Carting in harvest, - - - - -	0	0	1
	0	2	0
Clear profit, 1 l. 2 s. 5 d. per acre, - - - - -	0	5	7

OBSERVATIONS.

This is a very good crop for so bad a year; and proves, I think, much in favour of horse-hoed turneps, as a preparation for barley broad-cast. My crops in large, after broad-cast turneps, were by no means so good; but then, indeed, clover was sown with them, which occasioned much damage.

EXPERIMENT N° 22.

Culture, expences, and produce, of half a rood, field M*, 1766.

CULTURE.

This piece was planted with potatoes in 1765, upon very complete management, both in tillage and manure. They were not taken up till the end of november, when it was ploughed on to the ridge. In march it was stirred again; and in april, ploughed and sown with 2 pecks of barley; mown in august. The produce, 10 bushels. It was beaten down almost flat.

EXPENCES.

EXPENCES.

£. s. d.

Three ploughings,	-	-	-	-	-	0	0	4½
Harrowing,	-	-	-	-	-	0	0	0½
Seed and sowing,	-	-	-	-	-	0	1	9
Mowing and harrowing,	-	-	-	-	-	0	0	5
Threshing,	-	-	-	-	-	0	1	3

Rent, &c.	-	-	-	-	-	0	3	9½
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£. s. d.

0 2 1½

0 5 11½

PRODUCE.

£. s. d.

Ten bushels, at 25 s.	-	-	-	-	-	1	11	3
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Expences,	-	-	-	-	-	0	5	11½
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Profit, 10 l. 2 s. 6 d. per acre,	-	-	-	-	-	1	5	3½
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£. s. d.

Ploughing,	-	-	-	-	0	0	10½
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Harrowing,	-	-	-	-	0	0	0½
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Carting in harvest,	-	-	-	-	0	0	0½
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0 1 0

Clear profit, 9 l. 14 s. 6 d. per acre.	-	-	-	-	-	1	4	3½
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OBSERVATIONS.

This immense crop, in so bad a season, is the strongest proof in the world of the consequence of rich manurings, when properly qualified for corn, by the intervention of a crop that takes off the first violence of the effect without receiving damage. This is the case with potatoes; and this experiment gives much reason to conclude, that that root is an admirable sweetner, and prepares the soil excellently for corn: that it does not draw off all the virtue of the dung, is evident, by the product that followed in so bad a season. It should be remarked, that this crop being quite beaten down seemed to affect it but little, as may be gathered both from the quantity and price.

EXPERIMENT N° 23.

Culture, expences, and produce, of three acres, part of field O, 1767.

CULTURE.

April the 20th, ploughed up the turnep land, and sowed it with 9 bushels of barley; september 2d, mowed it; carried it the 15th. Produce, 8 quarters

8 quarters 4 bushels, and 6 bushels of screenings: in all, 9 quarters 2 bushels.

EXPENCES.

	£.	s.	d.
One ploughing,	0	3	0
Harrowing,	0	1	6
Seed,	1	7	0
Sowing,	0	0	9
Rolling,	0	0	3
Water-furrowing,	0	2	0
Mowing,	0	3	6
Harvesting,	0	3	0
Harvest expences,	0	3	0
Threshing,	0	14	0
	2	18	0
Rent, &c.	2	11	0
	5	9	0

PRODUCE.

	£.	s.	d.
Eight quarters four bushels,	10	8	6
Screenings,	0	8	0
	10	13	6
Expences,	5	9	0

Profit, 1 £. 14 s. 10 d. per acre, 5 4 6

	£.	s.	d.
Ploughing,	0	7	3½
Harrowing,	0	5	7½
Rolling,	0	0	1½
Carting in harvest,	0	1	7½
	0	14	8½

Clear profit, 1 £. 9 s. 11½ d. per acre, 4 9 9½

OBSERVATIONS.

This crop, which amounted to better than 3 quarters per acre, would undoubtedly have been much better, had the turnep land been ploughed twice oftener before sowing; but the business of the spring coming fast on, would not admit it without a later sowing, which would have been worse than the want of tillage: however, the profit per acre is not inconsiderable,

able, especially as the year was so bad, and is a strong proof of the efficacy of good manuring.

EXPERIMENT N^o 24.

Culture, expences, and produce, of two acres, field H*, 1767.

December 22d, ridged up the carrot land; april 4th, harrowed it; the 23d, ploughed and sowed it with 6 bushels of barley; september 7th, mowed it; the 16th, carried it. Produce, 5 quarters, and 3 bushels of screenings; which are 2 quarters 5 bushels and 2 pecks *per* acre.

EXPENCES.

Two ploughings,	0	4	0
Harrowing,	0	1	6
Seed,	0	18	0
Sowing, (at 3 casts)	0	1	6
Rolling,	0	0	2
Weeding,	0	0	9
Mowing,	0	2	4
Harvesting,	0	2	0
Harvest expences,	0	2	0
Threshing,	0	13	4

Rent, &c.	2	5	7
	1	14	0
	3	19	7

PRODUCE.

Five quarters,	6	14	6
Screenings,	0	3	6
	6	18	0
Expences,	3	19	7

Profit, 1 l. 9 s. 2 d. <i>per</i> acre,	2	18	5
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	£.	s.	d.
Ploughing,	0	9	9
Harrowing,	0	5	3
Rolling,	0	0	1
Carting in harvest,	0	1	1
	0	16	2
Clear profit, 1 l. 1 s. 1 d. <i>per</i> acre,	2	2	3

OBSERVATIONS.

I must own, this crop disappointed me not a little; for, after deep ploughing, the hoeing, and cleaning of the carrots, and being ridged up in the winter, I expected a great produce of barley: the season, indeed, operated here as in every other field; but I imagined this would exceed that of N° 9; but the event proved otherwise: however, in a bad year, this produce was not a mean one.

EXPERIMENT N° 25.

Culture, expences, and produce, of 4 acres, part of field F*, 1767.

April 24th, ploughed and sowed it with 12 bushels of barley; mowed it September 8th; carried the 16th. Produce, 9 quarters, and 1 quarter 3 bushels of screenings: in all, 10 quarters 3 bushels; or 2 quarters 4 bushels and 3 pecks *per acre*.

EXPENCES.

£. s. d.

One ploughing,	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	0	1	6
Seed,	-	-	-	-	1	16	0
Sowing,	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	0	2	0
Rolling,	-	-	-	-	0	0	4
Mowing,	-	-	-	-	0	4	8
Harvesting,	-	-	-	-	0	10	0
Harvest expences,	-	-	-	-	0	4	0
Threshing,	-	-	-	-	1	6	0
<hr/>							
Rent, &c.	-	-	-	-	4	10	6
	-	-	-	-	3	8	0
<hr/>							
	-	-	-	-	7	18	6

PRODUCE.

£. s. d.

Nine quarters,	-	-	-	-	11	16	0
Screenings,	-	-	-	-	0	16	6
<hr/>							
Expences,	-	-	-	-	12	12	6
	-	-	-	-	7	18	6
<hr/>							
Profit, 1 l. 3 s. 6 d. <i>per acre</i> ,	-	-	-	-	4	14	0

Ploughing,

	£.	s.	d.
Ploughing,	0	9	0
Harrowing,	0	3	0
Rolling,	0	0	2
Carting in harvest,	0	2	2
Clear profit, 19 s. 8½ d. per acre,	3	18	1

OBSERVATIONS.

This product, in a generally bad year, was as much as could reasonably be expected from land that had received no manure for several years, and had been ploughed but once after the turneps; for although it was the first crop, yet the most advantageous course of husbandry will not, without very extraordinary tillage, yield good ones without manure: constant experience proves this, in every field and in every season.

EXPERIMENT N° 26.

Culture, expences, and produce, of 8 acres, field I, 1767.

September 11th 1766, ploughed up the oat stubble; october 4th, ploughed it again across; november 26th, harrowed it, and then ridged it up for the winter; may 4th, harrowed, ploughed, and sowed it with 3 quarters 4 bushels of barley; september 26th, mowed it, and carried october 1st. Produce, 13 quarters 5 bushels, and 1 quarter 1 bushel of screenings: in all, 14 quarters 6 bushels; or 1 quarter 6 bushels and 3 pecks per acre.

	EXPENCES.	£.	s.	d.
Four ploughings,	- - - -	1	12	0
Harrowing,	- - - -	0	3	0
Seed,	- - - -	4	4	0
Sowing,	- - - -	0	4	0
Water-furrowing,	- - - -	0	4	0
Rolling,	- - - -	0	0	8
Mowing,	- - - -	0	9	4
Harvesting,	- - - -	0	12	8
Harvest expences,	- - - -	0	8	0
Threshing,	- - - -	1	9	6
Rent, &c.	- - - -	9	7	2
		6	16	0
		16	3	2
		PRODUCE.		

PRODUCE

Thirteen quarters 5 bushels,
Screenings,

Screenings, 10/10/10

9 61 71 19 6 EXPENSES L. 2. 4.

Expences, - - - - - 16 3 2

Profit. 4 s. 6 d. per acre.

1900

Plumbing

Item	Quantity	Unit	Price	Total
Ploughing	100	acres	1.00	100.00
Harrowing	100	acres	.50	50.00
Sowing	100	acres	.25	25.00
Harvesting	100	acres	.75	75.00
Threshing	100	acres	.50	50.00
Stacking	100	acres	.25	25.00
Carting	100	acres	.25	25.00
Grass	100	acres	.50	50.00
Hay	100	acres	.50	50.00
Wheat	100	acres	.50	50.00
Oats	100	acres	.50	50.00
Barley	100	acres	.50	50.00
Peas	100	acres	.50	50.00
Beans	100	acres	.50	50.00
Turnips	100	acres	.50	50.00
Swedes	100	acres	.50	50.00
Carrots	100	acres	.50	50.00
Potatoes	100	acres	.50	50.00
Onions	100	acres	.50	50.00
Leeks	100	acres	.50	50.00
Cauliflower	100	acres	.50	50.00
Brussels Sprouts	100	acres	.50	50.00
Kale	100	acres	.50	50.00
Spinach	100	acres	.50	50.00
Peas	100	acres	.50	50.00
Beans	100	acres	.50	50.00
Turnips	100	acres	.50	50.00
Swedes	100	acres	.50	50.00
Carrots	100	acres	.50	50.00
Potatoes	100	acres	.50	50.00
Onions	100	acres	.50	50.00
Leeks	100	acres	.50	50.00
Cauliflower	100	acres	.50	50.00
Brussels Sprouts	100	acres	.50	50.00
Kale	100	acres	.50	50.00
Spinach	100	acres	.50	50.00
Peas	100	acres	.50	50.00
Beans	100	acres	.50	50.00
Turnips	100	acres	.50	50.00
Swedes	100	acres	.50	50.00
Carrots	100	acres	.50	50.00
Potatoes	100	acres	.50	50.00
Onions	100	acres	.50	50.00
Leeks	100	acres	.50	50.00
Cauliflower	100	acres	.50	50.00
Brussels Sprouts	100	acres	.50	50.00
Kale	100	acres	.50	50.00
Spinach	100	acres	.50	50.00
Peas	100	acres	.50	50.00
Beans	100	acres	.50	50.00
Turnips	100	acres	.50	50.00
Swedes	100	acres	.50	50.00
Carrots	100	acres	.50	50.00
Potatoes	100	acres	.50	50.00
Onions	100	acres	.50	50.00
Leeks	100	acres	.50	50.00
Cauliflower	100	acres	.50	50.00
Brussels Sprouts	100	acres	.50	50.00
Kale	100	acres	.50	50.00
Spinach	100	acres	.50	50.00
Peas	100	acres	.50	50.00
Beans	100	acres	.50	50.00
Turnips	100	acres	.50	50.00
Swedes	100	acres	.50	50.00
Carrots	100	acres	.50	50.00
Potatoes	100	acres	.50	50.00
Onions	100	acres	.50	50.00
Leeks	100	acres	.50	50.00
Cauliflower	100	acres	.50	50.00
Brussels Sprouts	100	acres	.50	50.00
Kale	100	acres	.50	50.00
Spinach	100	acres	.50	50.00
Peas	100	acres	.50	50.00
Beans	100	acres	.50	50.00
Turnips	100	acres	.50	50.00
Swedes	100	acres	.50	50.00
Carrots	100	acres	.50	50.00
Potatoes	100	acres	.50	50.00
Onions	100	acres	.50	50.00
Leeks</				

Rolling,	-	-	-	-	-	0	0	4
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Carting,

411 8

OBSERVATIONS.

The second crop on new land, and so well prepared for ploughing, ought to have been far better than this proved; but the extreme flatness of the field, and the wet nature of the soil, meeting so wet a season, all conspired to ruin the crop, which would, however, have proved much better, had the land been hollow-drained. The breaking up this field, bad pasture as it was, has been attended already with great loss; owing, in a good measure, to two very wet seasons.

EXPERIMENT N° 27.

Culture, expences, and produce, of a rood, field L*, 1767.

CULTURE.

This piece received the first tillage in autumn 1765; in march 1766, it was ploughed for the second time; in april, it was again stirred and harrowed; the middle of may, it received the fourth earth, and the second harrowing, and was manured with six loads rotten dung; in june, the fifth ploughing was given, which turned in a great crop of weeds; the next month, it was stirred again; and in august, it had the seventh; in september, the eighth; and in october, it was thrown into the ridge by the ninth. The next earth was in march; and in april, it was ploughed, and sown with a bushel of barley. Notwithstanding all this tillage, the crop was not perfectly free from weeds. Indeed I should in general remark, that the utmost efforts I have been able to make in the path of tillage, have not been attended with that decisive effect one would naturally expect from them. The weeds are not totally to be conquered by the utmost art of man:

when a very accurate cultivator congratulates himself, it can only be on a momentary extirpation; they will speedily return.

In august, this crop was mown, and threshed immediately. The produce, 12 bushels.

EXPENCES.		£.	s.	d.
Eleven ploughings,		0	2	9
Three harrowings,		0	0	1½
Labour, manuring,		0	2	6
Water-furrowing,		0	0	2
Seed and sowing,		0	3	3
Mowing and harvesting,		0	1	0
Threshing,		0	2	0
		<hr/>		
Rent, &c.		0	8	6
		<hr/>		
		1	0	3½

PRODUCE.		£.	s.	d.
Twelve bushels, at 23 s.		1	14	6
Expences,		1	0	3½
		<hr/>		
Profit, 2 l. 16 s. 10 d. per acre,		0	14	2½
		<hr/>		
Ploughing,		0	6	7
Harrowing,		0	0	3
Manuring,		0	3	9
Carting in harvest,		0	0	1½
		<hr/>		
		0	10	8½
		<hr/>		
Clear profit, 14 s. per acre,		0	3	6

OBSERVATIONS.

The year 1767, like the preceding, was very unfavourable to the production of corn; the crops in large, just registered, are in general poor; and I believe those in the neighbourhood in general yet worse; many did not near repay the expence of culture: this crop must, therefore, be considered as a very large one; the manuring was pretty ample, and the tillage extraordinary; but the profit (from the aggregate of expence) does not make a figure; the real profit, however, it should always be remembered, includes the state the land is left in for the succeeding crops, which is certainly a point of great importance. Had the manure been purchased, the loss would have been considerable.

EXPE-

EXPERIMENT N° 28.

Culture, expences, and produce, of a rood, field M*, 1767.

CULTURE.

Ploughed for the first time in october 1765, when five loads of farm-yard dung, twice mixed, were turned in; in march, gave it the first spring ploughing, and harrowed it fine, the dry-weather the beginning and middle of the month being remarkably favourable to tillage. In april, the weather was so bad, that only one ploughing was given, and one harrowing; whereas I purposed making it during that month as fine as a garden: The middle of may, four loads of compost, consisting of coal ashes, hog dung, mortar rubbish, and turf, in equal quantities, were spread on it, and turned in by the fourth earth; in june it was stirred twice more; in july, the seventh ploughing was given; the eighth in august; and in september, the ninth: the tenth, threw it on to the ridge in october. The first week in march, ploughed it the eleventh time, and harrowed in ten bushels of foot, and a bushel of barley seed. It came up, and flourished in a very fine manner; but was the middle of july much beaten down, and entangled, by rains. Mowed it the middle of august, and threshed it directly; found the produce to be two quarters one bushel.

	EXPENCES.	£.	s.	d.
Eleven ploughings,	- - - - -	0	2	9
Three harrowings,	- - - - -	0	0	1½
First manuring,	- - - - -	0	2	1
Second ditto, costs, &c.	- - - - -	0	12	0
Third ditto,	- - - - -	0	7	6
Seed and sowing,	- - - - -	0	3	3
Mowing and harvesting,	- - - - -	0	1	1
Threshing,	- - - - -	0	2	10

		1	11	7½
Rent, &c.	- - - - -	0	8	6
		2	0	1½

	PRODUCE.	£.	s.	d.
Two quarters one bushel, at 22 s.	- - - - -	2	6	9
Expences,	- - - - -	2	0	1½
Profit, 1 l. 6 s. 6 d. per acre,	- - - - -	0	6	7½

Ploughing,

	£.	s.	d.
Ploughing,	0	6	8 $\frac{1}{4}$
Harrowing,	0	0	3 $\frac{1}{2}$
Manuring,	0	15	1 $\frac{1}{2}$
Carting in harvest,	9	0	1 $\frac{1}{2}$
The above profit,	0	6	7 $\frac{1}{2}$
Loss, 3 l. 2 s. 3 d. per acre,	0	15	6 $\frac{1}{4}$

OBSERVATIONS.

The crop in this experiment was a very great one, especially if we consider the extreme unfavourableness of the season; but the expences run so very high when such quantities of manure are purchased, that the product must be immense to answer it; and the course of all the experiments I have registered prove to us, that the first crop of corn is not that to which we are to look for a reimbursement of great expences.

EXPERIMENT N^o 29.

Culture, expences, and produce, of a rood, field L^a, 1767.

CULTURE.

This piece, in 1766, yielded broad-cast turneps in perfect management, both of tillage and manure; they were drawn for cattle in february; and the beginning of march, it was ploughed up; the first week in april, stirred it again; the same month, ploughed it again, and sowed it with a bushel of barley. It made a very fine appearance through the season, was mown and threshed in august. The produce, 2 quarters 1 bushel 2 pecks.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	0	9
Harrowing,	0	0	1
Seed and sowing,	0	3	2
Water-furrowing,	0	0	1
Mowing and harvesting,	0	1	3
Threshing,	0	2	3
Rent, &c.	0	7	7
	0	4	3
	0	11	10

PRODUCE.

Two quarters one bushel two pecks, at 23 s.

Expences, - - - -

Profit, 7 l. 13 s. 11 d. per acre. - - -

Ploughing, - - - -

Harrowing, - - - -

Carting in harvest, - - - -

Clear profit, 7 l. 5 s. 5 d. per acre, - - -

£.	s.	d.
2	10	3
0	11	10
1	18	5
£.	s.	d.
0	1	9 $\frac{3}{4}$
0	0	2 $\frac{1}{4}$
0	0	1 $\frac{1}{2}$
0	2	1 $\frac{1}{2}$
1	16	4 $\frac{1}{2}$

OBSERVATIONS.

From repeated experience, there is the greatest reason to think, that very rich culture should be given to ameliorating crops, as a preparation for exhausting ones; the former are of a nature that will bear without damage the utmost strength of manure; they take off the heart of large quantities by a strong vegetation, and the culture given them while growing; they mix the manure with the soil, and prepare it excellently for the nourishment of plants that cannot feed in the same gross manner. The profit of this trial is very considerable. In more favourable seasons it would, doubtless, have been more so. Land may certainly be cultivated in so expensive a manner, that it cannot be repaid; but, from the general tenour of these experiments, there is much reason to think, that the more complete the culture (with judgement) the greater the profit; but the trials on wheat, as well as many of those on barley, tell us, that the manure should be applied in the first hand, when very amply used, to neither of these crops.

EXPERIMENT N^o 30.

Culture, expence, and produce, of a rood, field M*, 1767.

CULTURE.

This rood was cropped in 1766 with horse-hoed pease, and received its first ploughing in the autumn of the same year; in march it was stirred again; and ploughed and sowed in april, with one bushel of barley; it was much mildewed in june; mown and threshed in august. Produce, six bushels.

EXPENCES.

Three ploughings, - - - -

Harrowing, - - - -

Seed and sowing. - - - -

Carried over, - - - -

£.	s.	d.
0	0	9
0	0	1
0	3	3
0	4	1

	£.	s.	d.
Brought over,	0	4	1
Mowing and harvesting,	0	1	0
Threshing,	0	1	0
	0	6	1
Rent, &c.	0	4	3
	0	10	4

PRODUCE.

	£.	s.	d.
Six bushels, at 22 s.	0	16	6
Expences,	0	10	4
Profit, 1 l. 4 s. 8 d. per acre,	0	6	2

	£.	s.	d.
Ploughing,	0	1	9 $\frac{1}{2}$
Harrowing,	0	0	2 $\frac{1}{2}$
Carting in harvest,	0	0	1 $\frac{1}{2}$
	0	2	1 $\frac{1}{2}$
Clear profit, 16 s. 2 d. per acre,	0	4	0 $\frac{1}{2}$

OBSERVATIONS.

This is but a poor crop, considering that the pease were kept perfectly free from weeds, and in a fine well pulverized state. I apprehend a horse-hoed one in general is much inferior as a preparation to fallow, for which there are more reasons than one: the stripe of land on which the rows are, has no ploughing, only hand-hoeing, which is not comparable to it in execution; so that when the crop is reaped, and the field ploughed, a part of it rises in much inferior order to the rest. A drilled crop admits of horse-hoeing, which keeps the intervals (if wide ones) well pulverized; but a fallow admits of cross and angle ploughing and harrowing, by which means the surface is equally cut, and no part of it left unstirred. These operations are so essential to tillage, that I do not apprehend a field can be perfectly reduced without them, unless at a very extraordinary expence. For these reasons a fallow may always be preferred to one horse-hoed crop, as a preparation for a broad-cast one.

EXPERIMENT N^o 31.

Culture, expences, and produce, of half a rood, field L*, 1767.

CULTURE.

Yielded potatoes last year in very complete management, both of tillage and manure: they were dug up the end of october, and at the same time the moulds thrown on to the ridge: I generally plough them up; but when

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a very great crop is expected, it is better to dig them; in march ploughed down the ridges; and in april, ploughed and sowed it with half a bushel; mown in august, and threshed immediately. The produce, one quarter one bushel, and one peck.

EXPENCES.						£.	s.	d.
Two ploughings,	-	-	-	-	-	0	0	3
Harrowing,	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Seed and sowing,	-	-	-	-	-	0	1	8
Mowing and harvesting,	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	0	1	3
						<hr/>		
						0	3	8 $\frac{1}{2}$
Rent, &c.	-	-	-	-	-	0	2	1 $\frac{1}{2}$
						<hr/>		
						0	5	10

PRODUCE.						£.	s.	d.
One quarter, one bushel, and one peck, at 22 s.	-	-	-	-	-	1	5	5 $\frac{3}{4}$
Expences,	-	-	-	-	-	0	5	10
						<hr/>		
Profit, 7 l. 17 s. 2 d. per acre,	-	-	-	-	-	0	19	7 $\frac{1}{4}$
						<hr/>		
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	0	7 $\frac{1}{4}$
Harrowing,	-	-	-	-	-	0	0	1
Carting in harvest,	-	-	-	-	-	0	0	0 $\frac{3}{4}$
						<hr/>		
						0	0	9
						<hr/>		
Clear profit, 7 l. 11 s. 2 d. per acre.	-	-	-	-	-	0	18	10 $\frac{3}{4}$

OBSERVATIONS.

Potatoes are universal in the effect of preparing excellently for corn. This is a vast crop for a bad season, and greater than I have received after most other vegetables, however manured for; and the profit, from the account not being charged with manuring expences, is extremely great. What a contrast is formed by the common crops, and these upon an improved management! But it was totally beyond my power to cultivate my whole farm upon such expensive principles, although the crop would in another year have begun much to improve, from the large compost hills I had prepared in several fields.

EXPERIMENT N° 32.

Culture, expences, and produce, of a rood, field L*, 1767.

CULTURE.

This piece was cropped with cabbages in 1766, in complete management. They were cut during the winter for the cattle, and the land ploughed the first week in march; the middle of the same month, it was stirred again, and ploughed and sowed with one bushel the middle of april; mown and threshed in august. The produce, two quarters one bushel.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	0	9
Harrowing,	0	0	1
Seed and sowing,	0	3	2
Water-furrowing,	0	0	1
Mowing and harvesting,	0	0	10
Threshing,	0	2	1½
	0	7	0½
Rent, &c.	0	4	3
	0	11	3½

PRODUCE.

	£.	s.	d.
Two quarters one bushel, at 22 s.	2	6	9
Expences,	0	11	3½
Profit, 7 l. 1 s. 10 d. per acre,	1	15	5½

	£.	s.	d.
Ploughing.	0	1	9¾
Harrowing,	0	0	2¼
Carting in harvest,	0	0	1½
	0	2	1½
Clear profit, 6 l. 13 s. 4 d. per acre,	1	13	4

OBSERVATIONS.

Cabbages I have often found to be an excellent preparer for corn; and, when completely cultivated, they cover the ground so much as almost to exclude the air; and consequently occasion a putrid fermentation in the soil, which is of itself a wonderful fertilizer. This very considerable crop, in an unfavourable season, also shews, that the roots do not exhaust the land of that nourishment which the manure yields, nor which arises from the nature of the vegetable. Every crop of this sort which I register, is a fresh proof, that rich manures should be applied to the ameliorating crops,

by which means there is no danger of their power damaging the first crop, and the land is in great heart for the succeeding ones.

GENERAL OBSERVATIONS UPON THE PRECEDING EXPERIMENTS.

To obtain a clear idea of the effect of these trials, we must reduce them to tables of expences, produce, and profit, as before with Wheat; and if other circumstances call for different divisions, they may be made, that the object may be viewed in every light that is useful. But the distinction requires the experiments that are common crops to be stated separate from those that are completely managed.

EXPENCES.				£.	s.	d.	
Experiment N ^o 1.	-	-	-	2	8	8	per acre.
5.	-	-	-	2	1	2	
11.	-	-	-	2	2	9	
12.	-	-	-	4	2	10	
13.	-	-	-	3	9	6	
14.	-	-	-	2	3	7	
15.	-	-	-	2	10	9	
16. ^s	-	-	-	2	11	0	
17.	-	-	-	4	11	4	
20.	-	-	-	2	9	0	
21.	-	-	-	2	5	0	
23.	-	-	-	2	1	2	
24.	-	-	-	2	7	10	
25.	-	-	-	2	3	4	
26.	-	-	-	2	11	10	
30.	-	-	-	2	9	8	

General average of these, 2*l.* 13*s.* 8*d.*

PRICES of the Produce.				£.	s.	d.	
1764,	-	-	-	1	0	0	
1765,	-	-	-	1	0	0	
1766,	-	-	-	1	4	10	
1767,	-	-	-	1	3	3	
Average, 1 <i>l.</i> 2 <i>s.</i>							

Hence we find, that the expence of culture is equal to 2 qrs. 2 bushels of barley, at this general average price.

PRODUCE.				Q.	B.	P.	
Experiment N ^o 1.	-	-	-	2	1	0	per acre.
5.	-	-	-	2	2	0	
11.	-	-	-	2	2	1	
12.	-	-	-	2	0	2	
13.	-	-	-	2	0	0	
14.	-	-	-	0	5	2	

* This is 1*l.* 14*s.* in the Experiment; but add a year's rent, as the burnet came to nothing.

Experiment No

2. B. P.

per acre.

15.

1 4 0

16.

2 2 0

17.

4 0 0

20.

3 0 0

21.

2 6 0

23.

3 0 2

24.

2 5 2

25.

2 4 3

26.

1 6 3

30.

3 0 0

Average, 22, 3B.

2. B. P.

Average produce, - - - -

2 3 0

Ditto saving crop, - - - -

2 2 0

Average profit on these crops, - -

0 1 0

PROFIT and LOSS.

Profit.

£. s. d.

Experiment No 5.

0 13 5 per acre.

11.

0 11 3 $\frac{1}{4}$

16.

1 2 11

17.

0 8 8

20.

1 3 1

21.

1 2 5

23.

1 9 11 $\frac{1}{4}$

24.

1 1 1 $\frac{1}{2}$

25.

0 19 8 $\frac{3}{4}$

30.

0 16 2

Average, 18s. 10 $\frac{1}{4}$ d.9 8 9 $\frac{1}{4}$

Loss.

£. s. d.

No 1.

0 9 6

12.

1 8 11

13.

1 3 11

14.

1 8 3 $\frac{1}{4}$

15.

0 15 7 $\frac{1}{4}$

26.

0 6 11

Average, 18s. 10d.

5 13 2

Profit on 16 acres, - - - -

9 8 9 $\frac{1}{4}$

Loss on ditto, - - - -

5 13 2

Clear profit, or per acre 4s. 8 $\frac{1}{4}$ d.3 15 7 $\frac{1}{4}$

That this profit is a mere trifle, every one will, I believe, agree: it is insufficient to pay the interest of the money employed; consequently there is an impropriety in calling it profit: but the interest of such varying sums cannot be carried to account. Such small total profit should in husbandry be considered as loss. Can any argument in the world be so strong in favour of a correct and spirited culture, as this account of crops commonly managed? Some of them have been manured, but not in a perfect stile; and all followed fallow, or fallow crops; insomuch that, I am pretty confident, many of my neighbours on wet soils have in these years had equally bad success; notwithstanding their being in the regular train of manuring, and mine not begun: this point of the farm not in general receiving the manure, is one that should never be forgotten in the perusal of this course of experiments. From the most attentive observation I have ever been able to make, as well as from my own experience, I will venture to assert, that all the tillage in the world will not make amends for the want of manuring: those writers who are most sanguine in their praises of pulverization, particularly the prejudiced favourers of the drill husbandry, such as Tull, Du Chateauvieux, &c. spoke contrary to facts: they either never tried the efficacy of manuring judiciously, or they were uncandid in their writings. I will undertake, on any soil whatever, with only one year's fallow, by means of dung, to exceed the utmost efforts of tillage, *viz.* passing the whole surface 3 feet deep ever so often through a sieve, and taking ever so many years to the operation.

Let us, in the next place, divide these experiments according to soil, *viz.* into *gravelly* and *clayey* loam.

P R O D U C E.						
Gravelly Loam.				Q.	B.	P.
Experiment N ^o 5.	-	-	-	2	2	0
11.	-	-	-	2	2	1
16.	-	-	-	2	2	0
21.	-	-	-	2	6	0
23.	-	-	-	3	0	2
24.	-	-	-	2	5	2
30.	-	-	-	3	0	0
Which is 2Q. 4B. 3P. per acre,				18	2	1
Clayey Loam.				Q.	B.	P.
Experiment N ^o 1.	-	-	-	2	1	0
12.	-	-	-	2	0	2
13.	-	-	-	2	0	0
14.	-	-	-	0	5	2
15.	-	-	-	1	4	0
17.	-	-	-	4	0	0

Experiment N ^o	20.	25.	26.	2Q.	B.	P.
	-	-	-	3	0	0
	-	-	-	2	4	3
	-	-	-	1	6	3
Or, per acre, 2Q. 1B. 2P.	-	-	-	19	6	2

The variation between the soils is not great; but the superiority of the gravelly loam gives some reason to suppose that more favourable to barley than the other; which result is consistent with the general notion. But the reader should remark, that I do not offer the comparison as complete, since the trials were not purposely made with that view; and it is my professed idea, that no comparisons are decisive, but the merely experimental ones: however, I only calculate the proportions, and leave them to the reader's judgement.

PROFIT and LOSS.

Gravelly Loam.

Profit, N ^o	5.	11.	16.	21.	23.	24.	30.	£.	s.	d.
	-	-	-	-	-	-	-	0	13	5
	-	-	-	-	-	-	-	0	11	3 $\frac{3}{4}$
	-	-	-	-	-	-	-	1	2	11
	-	-	-	-	-	-	-	1	2	5
	-	-	-	-	-	-	-	1	9	11 $\frac{1}{4}$
	-	-	-	-	-	-	-	1	1	1 $\frac{1}{2}$
	-	-	-	-	-	-	-	0	16	2
Or, per acre, 19s. 9d.	-	-	-	-	-	-	-	6	18	3 $\frac{1}{2}$

Clayey Loam.

Loss, N ^o	1.	12.	13.	14.	15.	26.	£.	s.	d.
	-	-	-	-	-	-	0	9	6
	-	-	-	-	-	-	1	8	11
	-	-	-	-	-	-	1	3	11
	-	-	-	-	-	-	1	8	3 $\frac{3}{4}$
	-	-	-	-	-	-	0	15	7 $\frac{1}{4}$
	-	-	-	-	-	-	0	6	11
	-	-	-	-	-	-	5	13	2

Profit, N ^o	17.	20.	25.	£.	s.	d.
	-	-	-	0	8	8
	-	-	-	1	3	1
	-	-	-	0	19	8 $\frac{3}{4}$
	-	-	-	2	11	5 $\frac{3}{4}$
Loss, or, per acre, 6s. 10 $\frac{1}{4}$ d.	-	-	-	3	1	8 $\frac{1}{4}$

	£.	s.	d.
Profit on the gravel,	0	19	9
Loss on the clay,	0	6	10½
Gravel superior <i>per</i> acre by	1	7	7½

This superiority is very great, and gives no slight reason to suppose that the gravelly loam is naturally much superior to the clayey one in the production of barley: this, as I before observed, is the common notion; and it should not be slighted on *that* account. It is of much importance to the cultivator to know precisely, what crops are most fitted to every soil; for the difference is very great from the same expence. Various courses of crops should be planned for various soils, that include respectively those vegetables that are found peculiarly adapted to them. The difference in this comparison of above 27*s.* *per* acre at an average, between sowing the barley on a gravelly loam, or a clayey one, is very considerable; and in a large farm would amount to a vast sum of money. Many farmers (directed indeed by their leases) apply one course of crops to their whole farm, whatever variations there may be in the soil: this management cannot fail of being pernicious; a truth totally consistent with reason, but in husbandry the proof of experiment should ever be called in as the only test of reasoning. Respecting this comparison, however, let me again remark, that I do not offer it as decisive: the result does not *prove* the point, because the parallel is not purely experimental; but it undoubtedly affords much reason to conclude, that the truth, if not exactly stated, is at least not very distant.

The next view we take of these crops must be that of the course in which they are thrown; and the only variation of this sort is the succeeding a fallow, or a fallow-crop: by the latter I mean every thing except wheat, barley, and oats. And in this state I shall include expences, as well as product and profit.

EXPENCES.				£.	s.	d.
Fallow.						
Experiment N° 1.	-	-	-	2	8	8
12.	-	-	-	4	2	10
13.	-	-	-	3	9	6
16.	-	-	-	2	11	0
17.	-	-	-	4	11	4
Average, 3 <i>l.</i> 8 <i>s.</i> 8 <i>d.</i>	-	-	-	17	3	4
Fallow Crops.				£.	s.	d.
Experiment N° 5. Turneps,	-	-	-	2	1	2
11. Ditto,	-	-	-	2	2	9
14. Tares,	-	-	-	2	3	7
Carried over,	-	-	-	6	7	6

			£.	s.	d.
Carried over,	-	-	6	7	6
Experiment N ^o 15.	Pease,	-	2	10	9
20.	Drilled beans,	-	2	9	0
21.	Drilled turneps,	-	2	5	0
23.	Turneps,	-	2	1	2
24.	Carrots,	-	2	7	10
25.	Turneps,	-	2	3	4
30 ^h .	Drilled pease,	-	2	9	8
Average, 2l. 5s. 5d.			22	14	3
Average of fallow,			3	8	8
Ditto of fallow crops,			2	5	5
Difference,			1	3	3

From this parallel we find, that the expence of a fallow (being the difference of the two) amounts to about the value of a quarter of barley, at the average price of these experiments. Now there is much reason to suppose, that a summer fallow would at any time be attended with a larger increase than that quantity, on comparison with succeeding an exhausting crop: consequently the profit of that practice is very great. Numerous experiments have convinced me, that the utmost efforts of tillage will never procure a very capital crop: manuring is in every case requisite for that; but the union of both is the path of good husbandry; tillage for pulverization and the destruction of weeds, and manures for fertilizing.

PRODUCE.					
Fallow.			Q.	B.	P.
Experiment N ^o 1.	-	-	2	1	0
12.	-	-	2	0	2
13.	-	-	2	0	0
16.	-	-	2	2	0
17.	-	-	4	0	0
Average, 2.2 3B. 3P.			12	3	2
Fallow Crops.			Q.	B.	P.
Experiment N ^o 5.	-	-	2	2	0
11.	-	-	2	2	1
14.	-	-	0	5	2
Carried over,	-	-	5 1 3		

^hN^o 26 omitted, as it follows oats, and one experiment not to be opposed to the average of several.

						Q.	B.	P.
Brought over,	-	-	-	-	-	5	1	3
Experiment N ^o 15.	-	-	-	-	-	1	4	0
20.	-	-	-	-	-	3	0	0
21.	-	-	-	-	-	2	6	0
23.	-	-	-	-	-	3	0	2
24.	-	-	-	-	-	2	5	2
25.	-	-	-	-	-	2	4	3
30.	-	-	-	-	-	3	0	0
Average, 2Q. 3B.	-	-	-	-	-	23	6	2
						Q.	B.	P.
After a fallow,	-	-	-	-	-	2	3	3
After a crop,	-	-	-	-	-	2	3	0
Superiority of the former,	-	-	-	-	-	0	0	3

This difference being so small, shews that the advantage of a fallow over a fallow-crop is scarce any thing: the benefit of summer-fallowing is consequently only on comparison with exhausting crops succeeding each other, without ameliorating ones or a fallow intervening. The expence of a fallow is a quarter of barley, whereas the benefit is only 3 pecks; from which great difference it is sufficiently evident, that the profitable culture of barley, according to the preceding experiments, is the succeeding ameliorating crops.

PROFIT and LOSS.

						£.	s.	d.
Experiment, N ^o 1. Loss,	-	-	-	-	-	0	9	6
12.	-	-	-	-	-	1	8	11
13.	-	-	-	-	-	1	3	11
						3	2	4
						£.	s.	d.
16. Profit,	-	-	-	-	-	1	2	11
17.	-	-	-	-	-	0	8	8
Loss,	-	-	-	-	-	1	11	7
Average, 6s. 1 $\frac{3}{4}$ d.						1	10	9
						£.	s.	d.
Experiment N ^o 5. Profit,	-	-	-	-	-	0	13	5
11.	-	-	-	-	-	0	11	3 $\frac{1}{2}$
20.	-	-	-	-	-	1	3	1
21.	-	-	-	-	-	1	2	5
Carried over,	-	-	-	-	-	3	10	2 $\frac{1}{4}$

						£.	s.	d.
Brought over,	-	-	-	-	-	3	10	2 $\frac{1}{4}$
Experiment N ^o 23.	-	-	-	-	-	1	9	11 $\frac{1}{4}$
24.	-	-	-	-	-	1	1	1 $\frac{1}{2}$
25.	-	-	-	-	-	0	19	8 $\frac{3}{4}$
30.	-	-	-	-	-	0	16	2
						7	17	2 $\frac{1}{4}$
						£.	s.	d.
14. Loss,	-	-	-	-	-	1	8	3 $\frac{1}{4}$
15.	-	-	-	-	-	0	15	7 $\frac{1}{4}$
						2	3	11
Profit,	-	-	-	-	-	5	13	3 $\frac{1}{4}$
Average, 11s. 3 $\frac{1}{4}$ d.								
						£.	s.	d.
Fallow crops,	-	-	-	-	-	0	11	3 $\frac{3}{4}$
Fallow,	-	-	-	-	-	0	6	1 $\frac{1}{4}$
Superiority of the former,	-	-	-	-	-	0	5	2

This balance is a fresh proof of the superior profit of sowing barley after ameliorating crops.

In the next place, we must review those crops which were cultivated in a more complete manner than common; in some of which the powers of both tillage and manure were exerted in much perfection: these ought certainly to be considered distinctly from common husbandry. As a comparison between them cannot fail of being useful, I shall consider them, like the rest, under the three heads of *expences*, *product*, *profit* and *loss*.

						£.	s.	d.
Experiment N ^o 2.	-	-	-	-	-	4	16	0
3.	-	-	-	-	-	11	1	0
4.	-	-	-	-	-	6	1	1
6.	-	-	-	-	-	13	15	8
7.	-	-	-	-	-	13	9	8
8.	-	-	-	-	-	2	17	5
9.	-	-	-	-	-	2	13	6
18.	-	-	-	-	-	20	8	5
19.	-	-	-	-	-	2	10	1
22.	-	-	-	-	-	2	15	6
27.	-	-	-	-	-	6	4	0
28.	-	-	-	-	-	12	9	3

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GERMAN.

Book 1.

Experiment N^o 29.

31.

32.

Average, 7*l.* 1*s.* 7*d.*

£. s. d.

2 15 16

1 12 8

2 13 8

PRODUCE.

Q. B. P.

Experiment N^o 2.

3.

4.

6.

7.

8.

9.

18.

19.

22.

27.

28.

29.

31.

32.

Average, 8*Q.* 3*B.* 2*P.*

6 4 0

8 4 0

10 5 0

8 0 0

7 4 0

12 1 0

11 4 0

8 1 0

8 0 0

5 0 0

6 0 0

8 4 0

8 6 0

9 2 0

8 4 0

PROFIT and Loss.

£. s. d.

Experiment N^o 2. Profit,

4.

8.

9.

19.

22.

27.

29.

31.

32.

1 13 11

4 10 7

8 12 7

8 5 0

7 9 11

9 14 6

0 14 0

7 5 5

8 11 2

6 13 4

63 10 5

Brought over, profit,

£.	s.	d.
63	10	5

Experiment N^o 3, Loss,

£.	s.	d.
----	----	----

2	11	0
---	----	---

6,

5	19	8
---	----	---

7,

6	3	8
---	---	---

18,

10	5	5
----	---	---

28,

3	2	3
---	---	---

28	2	0
----	---	---

Profit clear,

35	8	5
----	---	---

Or, per acre, 2*l.* 7*s.* 2*d.*

The expence, product, and profit of these crops, are very great. Seven pounds an acre expences on a spring crop, all common farmers would think so great as impossible to be reaped; but we find the products are proportionably large. Eight quarters three bushels, upon an average of land and season, are an immense produce, and such as can never (on such middling soils) be raised by common management. The reason of the profit not being at first sight proportioned to the product, is the greatness of the manuring expences; but when we consider, that so many of the crops are manured in the richest manner, and the whole expence charged, 2*l.* 7*s.* 2*d.* per acre, on an average, will no longer appear a trifle, as the soil is left in so rich a state, that the succeeding crops cannot fail of being very great. From the following method of stating these totals, we shall at once see, that the only reason of the profit being so low, is the expence of manuring. I shall divide them into crops manured, and those not manured, the same crop.

Manured.

EXPENCES.

£.	s.	d.
----	----	----

Experiment N^o 2,

4	16	0
---	----	---

3,

11	1	0
----	---	---

4,

6	1	1
---	---	---

6,

13	15	8
----	----	---

7,

13	9	8
----	---	---

18,

20	8	5
----	---	---

27,

6	4	0
---	---	---

28,

12	9	3
----	---	---

Average, 11*l.* 0*s.* 7*d.*

	P R O D U C E.			Q.	B.	P.
Experiment N° 2,	-	-	-	6	4	0
3,	-	-	-	8	4	0
4,	-	-	-	10	5	0
6,	-	-	-	8	0	0
7,	-	-	-	7	4	0
18,	-	-	-	8	1	0
27,	-	-	-	6	0	0
28,	-	-	-	8	4	0
Average, 7Q. 7B. 3P.						

	P R O F I T and L O S S.			£.	s.	d.
Experiment N° 2, Profit,	-	-	-	1	13	11
4,	-	-	-	4	10	7
27,	-	-	-	0	14	0
				6	18	6

				£.	s.	d.
Experiment N° 3, Loss,	-	-	-	2	11	0
6,	-	-	-	5	19	8
7,	-	-	-	6	3	8
18,	-	-	-	10	5	5
28,	-	-	-	3	2	3
Loss,	-	-	-	28	2	0
Profit,	-	-	-	6	18	6
Loss,	-	-	-	21	3	6
Average, 2l. 12s. 11d.						

	N o t m a n u r e d.			E X P E N C E S.			£.	s.	d.
Experiment N° 8,	-	-	-	-	-	-	2	17	5
9,	-	-	-	-	-	-	2	13	6
19,	-	-	-	-	-	-	2	10	1
22,	-	-	-	-	-	-	2	15	6
31,	-	-	-	-	-	-	1	12	8
32,	-	-	-	-	-	-	2	13	8
Average, 2l. 10s. 5d.									

PRODUCE.

Q. B. P.

Experiment N° 8,	-	-	-	12	1	0
9,	-	-	-	11	4	0
19,	-	-	-	8	0	0
22,	-	-	-	5	0	0
31,	-	-	-	9	2	0
32,	-	-	-	8	4	0

Average, 9 Q. 0 B. 2 P.

PROFIT and LOSS.

£. s. d.

Experiment N° 8, Profit,	-	-	-	8	12	7
9,	-	-	-	8	5	0
19,	-	-	-	7	9	11
22,	-	-	-	9	14	6
31,	-	-	-	8	11	2
32,	-	-	-	6	13	4

Average, 8 l. 4 s. 5 d.

COMPARISON.

£. s. d.

Average expence, <i>per</i> acre, of the manured,	-	-	-	11	0	7
Ditto, unmanured,	-	-	-	2	10	5
Difference,	-	-	-	8	10	2

Q. B. P.

Average product of the unmanured,	-	-	-	9	0	2
Ditto of the manured,	-	-	-	7	7	3
Superiority of the former,	-	-	-	1	0	3
Average profit of the unmanured,	-	-	-	8	4	5
Loss by the manured,	-	-	-	2	12	11
Superiority of the former,	-	-	-	10	17	4

This comparison is remarkable; the difference in the expence is not surprising; but that the product of the unmanured should exceed the manured, may be thought extraordinary. This, however, is not difficult to account for: the latter were manured the crop preceding, which is all the difference between them; and as the manuring is remarkably ample and rich, the variation certainly proves, that the effect of it is much greater when incorporated with the soil in the degree that it must be by the time and

various operations attending a crop, than by the spreading, ploughing, &c. used for the first.

It may also be more favourable to a crop of corn to have the violence and heat of the manure taken off by another crop.—The vast superiority of the unmanured in profit, is owing to the manure being charged in one case, and not in the other. As these crops vary so much in culture, I shall not divide them according to soil; for the difference of the manures is great enough to overcome every other circumstance.

Comparison between the experiments commonly conducted, and those which include a perfection of culture.

EXPENCES.				£.	s.	d.
Improved husbandry, average expence,	-	-	-	7	1	7
Common ditto, ditto,	-	-	-	2	13	8
Excess of the former,	-	-	-	4	7	11
				2.	B.	P.
Average product of the improved husbandry,	-	-	-	8	3	2
Ditto of the common ditto,	-	-	-	2	3	0
Superiority of the former,	-	-	-	6	0	2
				£.	s.	d.
Average profit of the improved husbandry,	-	-	-	2	7	2
Ditto of the common ditto,	-	-	-	0	4	8½
Superiority of the former,	-	-	-	2	2	5½
				£.	s.	d.
Improved husbandry, average profit of the three best crops,	-	-	-	8	16	10
Ditto of the common,	-	-	-	1	5	3
Difference,	-	-	-	7	11	7
				£.	s.	d.
Improved husbandry, average loss on three worst crops,	-	-	-	7	9	7
Ditto of the common,	-	-	-	1	7	0
Difference,	-	-	-	6	2	7

The balance of this comparison is, in every article, just what might be supposed. A superior culture most certainly must be conducted at a much greater expence than common husbandry; for no improvements, however simple, can be executed but at much expence: we consequently find the one to be three times more expensive than the other. The difference of product

product is however answerable to this great variation of expence; that of the improved husbandry is near four times over more considerable than that of the common; which is a prodigious difference: an acre in one method of culture yielding near as much as four in another, is an improvement of the most important kind, not only to the farmer, but to the publick; and especially as it is effected without any variation in the mode of sowing, executed with common instruments, and in every respect attainable by the mere improvement of common practice. The difference of profit answers that of product; the common management yields less by ten times than the improved; which is a difference that requires no comment.

These experiments on barley prove, upon the whole, that the profit of cultivating a few acres in a very masterly manner far exceeds the advantage of large tracts of land managed in a common manner. It appeared to be the same with wheat; and I doubt not but the like conclusion will be drawn from the comparative culture of every other vegetable. It is true, the fields of barley which I had in large, had not, as in other cases, a proper portion of manure, from the composts which I had made on a large scale not coming into use; but these crops were in general well prepared for by tillage or fallow-crops; and, upon an average, at least equaled the produce of my neighbours' fields, upon the same kind of soil: but when land is brought into clean order, the product will be proportioned to the manure in almost every case: if land is not clean, manure will make the weeds flourish, to the destruction of the crop.

S E C T. II.

CULTURE and PRODUCE in the new METHOD.

BARLEY is one of the grains which the writers on the new husbandry have much recommended for that mode of sowing. I tried it in consequence of their opinion, giving it the same attention as wheat, and in every instance endeavoured to accommodate as much as possible the culture to the nature of the grain. I was in this, as in every other article, under a very great inconvenience for want of a drill-plough, until I got Mr. Randall's, which proved somewhat better than none. The expence of conducting a series of trials in the new husbandry without the instruments necessary for it is immense; but those who would have the satisfaction of registering experiments of real authority, must spare no expence. Indeed this truth is so strong in experimental husbandry, that I do not think a man can well addict himself to a more costly amusement. These remarks must be my apology, if any is requisite, for not throwing whole fields into the drill culture of each vegetable.

EXPERIMENT N^o I.

| Culture, expences, and produce, of ten perches, field L*, 1764.

CULTURE.

This piece was fallowed from the autumn of 1762; and in october 1763, thrown on to ridge for the winter, by the ninth ploughing; in march, it was stirred again, and twice more in april, the last of which left it in beds five feet broad; upon the crown of each were drilled two rows of barley, one foot asunder, with half a peck of seed. It came up very favourably, and received a hand-hoeing the middle of may; but it was with some difficulty that I kept the men from burying the plants: the second week in june, horse-hoed the rows with a common plough, turning a furrow

a furrow from the plants, throwing up a ridge in the middle of the intervals. I found this operation very ticklish; the idea I had of it was the necessity of cutting very near the rows, that the influence of the air may be exerted upon the moulds in the furrow, for the roots of the corn to feed upon; but in executing it, I found extreme difficulty; for much of the corn was buried in it, which obliged me to direct the fellow not to go nearer to the rows than five inches. - After this operation, the rows were hand-hoed again, and where the plough had not cut near enough, the earth was moved by the hoe; but in both the horse and hand-hoeing, I found the stalks of barley so very weak, that the least clod rolling against them quite buried them. I found these accidents much more frequent and troublesome with barley than with my wheat experiments, which supported itself better by far. The first week in July, gave it the second horse-hoeing, reversing the ridge, and throwing the moulds to the corn. This horse-hoeing buried some more of the corn; but it was not possible to prevent it. In another week, a third horse-hoeing was given, contrary to the last; and though we did not go very near, yet I observed in a day or two, that much of the barley was fallen into the furrows, for want of support at the root. The end of the month, the mould was for this reason returned to the plants by the fourth horse-hoeing; reaped it in August. The produce, one bushel. The particulars of the expences and produce, proportioned to the acre, are as follows:

EXPENCES.						£.	s.	d.
Twelve ploughings,	-	-	-	-	-	0	12	0
Harrowing,	-	-	-	-	-	0	0	4
Water-furrowing,	-	-	-	-	-	0	1	0
Drilling,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	5	0
Two hand-hoeings,	-	-	-	-	-	0	5	0
Four horse-hoeings,	-	-	-	-	-	0	2	8
Reaping,	-	-	-	-	-	0	4	6
Harvesting, &c.	-	-	-	-	-	0	1	6
Threshing,	-	-	-	-	-	0	1	8
						<hr/>		
						1	13	11
Rent, &c.	-	-	-	-	-	1	14	0
						<hr/>		
						3	7	11
PRODUCE.								
Two quarters, at 20 s.	-	-	-	-	-	2	0	0
						<hr/>		
Loss,	-	-	-	-	-	1	7	11
						<hr/>		
						Ploughing,		

Loss brought over,

Ploughing,
Harrowing,
Drilling,
Horse-hoeing,
Carting in harvest,

£. s. d.
0 18 0
0 0 4½
0 0 1½
0 1 8
0 0 3½

£. s. d.
7 11 11

Total loss,

1 0 5½
2 8 4½

OBSERVATIONS.

Considering that I gave a particular attention to the conduct of this experiment (as it was my first year of trying the drill culture), this loss is very great: the soil was got into fine order; the operations of hand and horse-hoeing were duly and regularly performed, and the appearance of the crop was such as promised, if not profit, at least not such loss as this. I am much inclined to believe, from the event of this trial, that the horse-hoeing culture of barley is not so well adapted to the nature of that vegetable as the broad-cast. A crop in the latter way might not have been very profitable; but it certainly would not have been attended with loss. From the observations I have been able to make on barley, I have much reason to believe, that it will not thrive proportionably well in drills as wheat; the stalks of the latter being much stronger, and consequently better able to support themselves.

EXPERIMENT N° 2.

Culture, expences, and produce, of ten perches, field M*, 1764.

CULTURE.

This piece was fallowed from autumn 1762. In april 1764, ploughed it by the tenth earth on to three feet ridges, arched them in a day or two after by the eleventh, and drilled on the top of each a double row of barley one foot asunder, taking half a peck of seed. Hand-hoed the rows the end of may, and horse-hoed them the first week in june; the middle of the same month, horse-hoed them a second time, turning the moulds which before were thrown against the rows, from them forming a ridge in the middle of the interval; in a few days after, hand-hoed the rows; the middle of july, horse-hoed them again, the contrary way to the last; and the first week in august, again for the last time; hand-weeded the rows soon after; reaped it the last week of the same month. The produce, one bushel and half a peck. The expences of this culture, proportioned to the acre, are as follows:

EXPENCES.

	£.	s.	d.
Eleven ploughings,	0	11	0
Harrowing,	0	0	4
Drilling,	0	0	3
Seed,	0	2	8
Two hand-hoeings,	0	5	6
One hand-weeding,	0	1	6
Four horse-hoeings,	0	2	8
Reaping,	0	5	0
Harvesting, &c.	0	2	0
Threshing,	0	2	3

Rent, &c.	1	13	2
	1	14	0

PRODUCE.

Two quarters two bushels, at 20 s.	2	5	0
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Loss,	1	2	2
-------	---	---	---

	£.	s.	d.
Ploughing,	0	16	6
Harrowing,	0	0	4½
Drilling,	0	0	1½
Horse-hoeing,	0	1	8
Carting in harvest,	0	0	3½

Total loss,	2	1	1½
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OBSERVATIONS.

This crop, like the preceding, I flatter myself, had in every respect fair play, which, indeed, was manifested by the appearance of it through the season; and yet the loss sustained by it is considerable. I have no conception, from these experiments, that barley is a proper crop for drilling; for notwithstanding all the care that could be taken in the operations of the culture while growing, yet when it was in ear much of it fell into the intervals, and was entangled so as to lose much of the beauty of its appearance; whereas my drilled wheat, although bent and inclined different ways, yet held up, and was none of it beaten down.

EXPE-

EXPERIMENT N° 3.

Culture, expences, and produce, of ten perches, field L^o, 1764.

CULTURE.

Fallowed from the autumn of 1762; ploughed it the second week in april 1764, on to five feet ridges; and in a few days after, arched them up, and harrowed them; this made ten clean earths; the 21st of the same month drilled them with three rows eight inches asunder of barley on the crown of each ridge, using half a peck of seed; the 30th of may, hand-hoed the rows; the second week in june, horse-hoed them, turning a furrow from the plants, and throwing up a ridge in the middle of the intervals; the 30th, gave the second horse-hoeing contrary to the last; july 9th, hand-hoed the rows; and the middle of the month, horse-hoed them again, reversing the last; the last week of the same month, horse-hoed them for the fourth time, leaving the plants banked up, and an open furrow in the middle of each interval; reaped it the 22^d of august. The produce, one bushel one peck and a quarter. The expences, produce, &c. proportioned per acre, are as follows:

EXPENCES.						£.	s.	d.
Ten ploughings,	-	-	-	-	-	0	10	0
Harrowing,	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	5	0
Two hand-hoeings,	-	-	-	-	-	0	5	9
Four horse-hoeings,	-	-	-	-	-	0	2	8
Reaping,	-	-	-	-	-	0	5	0
Harvesting,	-	-	-	-	-	0	1	8
Threshing,	-	-	-	-	-	0	2	7½
						<hr/>		
Rent, &c.	-	-	-	-	-	1	13	3½
						1	14	0
						<hr/>		
						3	7	2½

PRODUCE.						£.	s.	d.
Two quarters five bushels, at 20 s.	-	-	-	-	-	2	12	6
Loss,	-	-	-	-	-	0	14	9½
						<hr/>		
Ploughing,	-	-	-	-	-	0	15	0
Harrowing,	-	-	-	-	-	0	0	4½
Drilling,	-	-	-	-	-	0	0	1½
Horse-hoeing,	-	-	-	-	-	0	1	8
Carting in harvest,	-	-	-	-	-	0	0	3¼
						<hr/>		
						0	17	5¼
						<hr/>		
Total loss,	-	-	-	-	-	1	12	3¼

OBSER-

OBSERVATIONS.

This experiment turns out but little better than the others; it only gives one reason to think, that three rows are better than two: the same evils occurred in this piece as in the preceding ones; that of dropping into the furrows of the horse-hoeing, if the plough goes within four inches of the rows, and which must be the case, if that operation is well executed.

OBSERVATIONS on the drilled crops of 1764.

My experiments on drilling barley this year gave me a very unfavourable idea of this method of cultivating that grain; nor could I, in reason, conceive, from the most attentive notice I could give it, that the drills could ever equal the broad-cast method in the product of barley. This, I am sensible, is but reasoning, which is never to be *opposed* to facts; but when both reason and experiment unite, a much greater confidence may be safely given. From these trials, I apprehend that barley has too weak a stalk to support itself in drills sufficiently for horse and hand-hoeing: wheat I have found in this respect extremely troublesome; but not in any thing like the degree of barley which falls and entangles so much, that the requisite operations must be much hurried, or great mischief done by them.

Barley will not, on moist and wet loams, bear much rain, without being well water-furrowed; the repetition of which work is very difficult in the spring preparation, as it is very hazardous to plough in that season, without striking them every time.

Drilling barley has this year proved so uniformly unsuccessful, that I shall be cautious of venturing the culture in large in future, as I apprehend much money may probably be lost by it.

EXPERIMENT N^o 4.

Culture, expences, and produce, of ten perches, field L*, 1765.

CULTURE.

This piece was fallowed from autumn 1764, when it was ridged for the winter, and well water-furrowed; in march 1764, gave it the first spring ploughing; in april, it received the third earth; in may, the fourth, and was twice harrowed; in june, gave it the fifth ploughing; in july, another stirring; in august, the seventh; and two more in september; and october the last of which threw it on to the ridge for that winter; the second week in april 1765, ploughed on to five feet ridges, and soon after arched them up by another ploughing; then harrowed them twice, and drilled three rows of barley, one foot asunder, on the top of each, using half a peck of seed; may 10th, hand-hoed the rows; the 15th, gave the first horse-hoeing, by turning a furrow from the plants, throwing a ridge up in the middle of the intervals; the 24th, split this ridge by the second horse-hoeing;

ing; june 6th, hand-hoed the rows again; the extreme warm weather, without rain, does not appear to retard the growth of this crop so much as that of many others of barley broad-cast; the 22d, gave the third horse-hoeing; july 17th, the fourth and last. Notwithstanding the extreme drought, which shortened the plants, and kept them from beating down, yet this last horse-hoeing was not performed without some difficulty, from the stalks being much bent and entangled. Reaped the crop the 17th of august, and threshed it directly; found the produce to be three pecks and one fourth. Proportions *per* acre as follows:

EXPENCES.					£.	s.	d.
Eleven ploughings,	-	-	-	-	0	11	0
Harrowing,	-	-	-	-	0	0	6
Water-furrowing,	-	-	-	-	0	1	0
Drilling,	-	-	-	-	0	0	3
Seed,	-	-	-	-	0	5	0
Two hand-hoeings,	-	-	-	-	0	4	6
Four horse-hoeings,	-	-	-	-	0	2	8
Reaping,	-	-	-	-	0	4	3
Harvesting, &c.	-	-	-	-	0	1	2
Threshing,	-	-	-	-	0	1	7½
					<hr/>		
Rent, &c.	-	-	-	-	1	11	11½
					1	14	0
					<hr/>		
					3	5	11½
PRODUCE.							
Thirteen bushels, at 20 s.	-	-	-	-	1	12	6
Loss,	-	-	-	-	1	13	5½
					<hr/>		
Ploughing,	-	-	-	-	0	11	0
Harrowing,	-	-	-	-	0	0	6¾
Drilling,	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	0	4	0
Carting in harvest,	-	-	-	-	0	0	6½
					<hr/>		
					0	16	4¼
Total loss,	-	-	-	-	2	9	9¼
					<hr/>		

OBSERVATIONS.

This loss is very considerable, and is a fresh proof that barley is improper for this culture. This season is a variation from the preceding one; and yet the ill-success is the same. The expence of rent in this experiment, no more than the last year's trials, is the reason of the crop being unprofitable;

unprofitable; for if that of a year is deducted from the loss, it will be lessened, it is true; but by no means reduced to profit: even if the whole rent is deducted without any deduction from the crop for the fallow, yet loss will be the balance. It appears that the grain is utterly improper for the drill-culture. I shall, however, continue my trials, and even vary them, that no doubt may remain of the point.

EXPERIMENT N° 5.

Culture, expences, and produce, of ten perches, field L*, 1765.

CULTURE.

This piece, like the preceding, was ploughed for the first time in autumn 1763, when one load of rotten farm-yard dung was turned in; in march, the second earth was given; in april, it was stirred again; and the first week in may, a load of compost was spread on it, consisting of equal parts of coal ashes, hog-dung, and turf, well mixed. It was ploughed in directly. In june, the fifth earth was given; it was stirred twice more in july; in august, it received the eighth ploughing; in september, the ninth: and was ridged up in october. I was not able to stir it again before the end of march, when it was thrown into five-feet ridges; arched them up by the twelfth and last earth, and, after harrowing fine, drilled them with three rows of barley, eight inches asunder, taking half a peck of seed. The 25th of april, hand-hoed the rows quite clean; and horse-hoed them the 18th of may, turning a furrow from the plants; the 31st, gave the second horse-hoeing; and the 10th of june, hand-weeded the rows; the 22d, horse-hoed them for the second time; the 31st of july, the third; and the fourth on the 29th of the same month. Reaped it the 20th of august, and threshed it directly; found the produce to be one bushel, one peck, and three quarters.

EXPENCES.

	£.	s.	d.
Twelve ploughings,	0	12	0
Harrowing,	0	0	4
Water-furrowing,	0	1	0
Drilling,	0	6	3
Seed,	0	5	0
One hand-hoeing,	0	3	0
One hand-weeding,	0	2	0
Four horse-hoeings,	0	2	8
Reaping,	0	4	3
Harvesting, &c.	0	1	2
Threshing,	0	2	10½
Labour, first manuring,	0	5	6
Carried over,	2	0	0½

	£.	s.	d.
Brought over,	2	0	0
Labour, second manuring, cost, &c.	0	18	6
	2	18	6½
Rent, &c.	1	14	0
	4	12	6½

PRODUCE.

Two quarters seven bushels, at 20s	-	-	2	17	6
Loss,	-	-	1	15	0½
	£.	s.	d.		
Ploughing,	0	12	0		
Harrowing,	0	0	4½		
Drilling,	0	0	3		
Manuring,	1	6	2½		
Horse-hoeing,	0	4	0		
Carting in harvest,	0	0	6½		
			2	3	4½
Total loss,	-	-	3	18	5

OBSERVATIONS.

One circumstance in this experiment is very remarkable, which is, the small benefit there appears from the manures. This crop of horse-hoed barley is very little the better for it. The season, it is true, has been extremely dry, which, probably, has much counteracted their efficacy; but yet the remaining advantage might have been expected greatly to exceed what one may here imagine to be the increase. I am inclined, from the little experience I have had of this culture, to apprehend crops in rows much less adapted to yielding in consequence of manures than broad-cast crops; and this opinion seems to be consonant with reason. If the dung was laid only in a furrow, under the rows of corn, the case would probably be different. The loss by this trial, independently of a rich manuring, is a fresh proof, that barley will not succeed in this husbandry *upon my soils*.

EXPERIMENT N° 6.

Culture, expences, and produce, of ten perches, field M*, 1765.

CULTURE.

This piece yielded horse-hoed turneps, in perfect culture of tillage and manure, in 1764. The ridges (five feet broad) were reversed by one ploughing, the 29th of march; the second week in april, arched them up by another ploughing; harrowed them twice, and drilled on the top of each three

three rows of barley, eight inches asunder, using half a peck of seed; the 23d of may, hand-hoed the rows; and the 1st of june, horse-hoed them for the first time; the 17th, repeated that operation; the 26th, hand-weeded the rows; july 8th, gave the third horse-hoeing, and the last the 25th of the same month; reaped it august 22d. The produce, one bushel and half a peck. Proportion *per* acre.

EXPENCES.						£.	s.	d.
Two ploughings,	-	-	-	-	-	0	2	0
Harrowing,	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	0	0	3½
Seed,	-	-	-	-	-	0	5	0
Hand-hoeing,	-	-	-	-	-	0	4	6
Hand-weeding,	-	-	-	-	-	0	2	0
Four horse-hoeings,	-	-	-	-	-	0	2	8
Reaping,	-	-	-	-	-	0	4	0
Harvesting, &c.	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	0	2	3
						<hr/>		
						1	4	0½
Rent, &c.	-	-	-	-	-	0	17	0
						<hr/>		
						2	1	0½

PRODUCE.						£.	s.	d.
Eighteen bushels, at 20 s.	-	-	-	-	-	1	5	0
Loss,	-	-	-	-	-	0	16	0½
						<hr/>		
Ploughing,	-	-	-	-	-	0	2	0
Harrowing,	-	-	-	-	-	0	0	4½
Drilling,	-	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	-	0	4	0
Carting in harvest,	-	-	-	-	-	0	0	6½
						<hr/>		
						0	7	2
Total loss,	-	-	-	-	-	1	3	2½

OBSERVATIONS.

I had very great expectations from this crop. The soil was in excellent heart, full of manure that had been near a year in it, and perfectly mixed, all heat taken off. Under such circumstances, the drought I expected would not be at all fatal. Indeed the appearance of the corn was for some time very beautiful; but it dropt and entangled, as I have before often remarked, for that the horse and hand-hoeing could not be performed without damage, which circumstance has been universal with my crops of drilled barley. And after all the advantages above recited, the product is very trifling, and the

	£.	s.	d.
Brought over,	1.	18	1½
Threshing,	0	1	6
	1	9	7½
Rent, &c.	1	14	0
	3	3	7½

PRODUCE.

Twelve bushels, at 20 s.	1	10	0
Loss,	1	13	7½

	£.	s.	d.
Ploughing,	0	10	0
Harrowing,	0	0	4½
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6½
	0	15	2
Total loss,	2	8	9½

ACCOUNT of N^o 2.

EXPENCES.

	£.	s.	d.
Ten ploughings,	0	10	0
Harrowing,	0	0	4
Drilling,	0	0	3½
Seed,	0	5	0
Hand-hoeing,	0	4	6
Hand-weeding,	0	2	0
Four horse-hoeings,	0	2	8
Reaping,	0	4	0
Harvesting, &c.	0	1	2
Threshing,	0	2	0
	1	11	11½
Rent, &c.	1	14	0
	3	5	11½

PRODUCE.

Two quarters, at 20 s.	2	0	0
Loss,	5	11½	

Loss brought over,

£.	s.	d.
1	5	11½

Ploughing,	-	-	-	-
Harrowing,	-	-	-	-
Drilling,	-	-	-	-
Horse-hoeing,	-	-	-	-
Carting in harvest,	-	-	-	-

£.	s.	d.
0	10	0
0	0	4½
0	0	3
0	4	0
0	0	6½

0	15	2
---	----	---

Total loss,

2	1	1½
---	---	----

ACCOUNT of N° 3.

EXPENCES.

Ten ploughings,	-	-	-	-	-
Harrowing,	-	-	-	-	-
Drilling,	-	-	-	-	-
Seed,	-	-	-	-	-
Hand-hoeing,	-	-	-	-	-
Hand-weeding,	-	-	-	-	-
Four horse-hoeings,	-	-	-	-	-
Reaping,	-	-	-	-	-
Harvesting,	-	-	-	-	-
Threshing,	-	-	-	-	-

£.	s.	d.
0	10	0
0	0	4
0	0	3½
0	5	0
0	4	0
0	2	0
0	2	8
0	4	0
0	1	2
0	1	9

Rent, &c.

1	11	2½
1	14	0

3	5	2½
---	---	----

PRODUCE.

Fourteen bushels, at 20 s.

1	15	0
---	----	---

Loss,

1	10	2½
---	----	----

Ploughing,	-	-	-	-
Harrowing,	-	-	-	-
Drilling,	-	-	-	-
Horse hoeing,	-	-	-	-
Carting in harvest,	-	-	-	-

£.	s.	d.
0	10	0
0	0	4½
0	0	3
0	4	0
0	0	6½

0	15	2
---	----	---

Total loss,

2	5	4½
---	---	----

Loss by the double rows,

2	8	9½
---	---	----

Ditto by the treble at 18 inches,

2	1	1½
---	---	----

Latter superior by

0	7	8
---	---	---

				£.	s.	d.
Loss by the double rows,	-	-	-	2	8	9½
Ditto by the treble rows at one foot,	-	-	-	2	5	4¼
Latter superior by	-	-	-	0	3	5
Loss by the treble rows at one foot,	-	-	-	2	5	4½
Ditto by ditto at eight inches,	-	-	-	2	1	1½
Latter superior by	-	-	-	0	4	3

OBSERVATIONS.

The first remark which this experiment calls for, is the general loss. There are small variations, according to the rows; but all are losing crops, and that considerably. I found in all of them (but most in the double ones) the difficulty of horse and hand-hoeing, from the weakness of the stalks, which I have so often mentioned. All requisite attention was given to these crops; but from repeated experience I find it vain. Drilling (upon these soils) will not allow of profitable crops.

The superiority in the comparison of the treble rows at eight inches decides in favour of that mode of sowing rather than the other specified ones; for though the balance is not large, yet it proves a superiority, which in stronger variations might probably be found of much greater consequence. It gives us some reason to believe, that three feet eight inches interval for horse-hoeing is as good a distance as four feet, the breadth of those of the treble rows at one foot; and if so, the superiority is decisive, from admitting so many more rows in an acre; and the loss by the double rows being the most considerable of the three, gives fresh reason to believe that this is the case.

OBSERVATIONS on the crops of the year 1765.

This year's experience brings many new proofs that the drill-culture is improper for the production of barley. The crops have received preparations extremely various, and yet the event has been nearly uniform in ill-success. It certainly is remarkable, that amongst these numerous variations, not one should be profitable. I have met with success in drilling wheat: is it not surprizing, that my experiments on barley should be so very contrary? The idea I formed last year of the weakness of the stalks being in a good measure the occasion, now receives confirmation. I have but little doubt, that successive years will prove it yet stronger; so that in time I may lay aside drilling of this grain, as a practice totally contrary to all principles and experience, with the proviso, however, *on my soils*.

Brought over, expences,

£.	s.	d.
2	5	7½

PRODUCE.

Nine bushels, at 24s.

1	7	0
---	---	---

Loss,

0	18	7½
---	----	----

Ploughing,

£.	s.	d.
----	----	----

Harrowing,

0	4	9½
---	---	----

Drilling,

0	0	9
---	---	---

Horse-hoeing,

0	0	3
---	---	---

Carting in harvest,

0	4	0
---	---	---

0	0	6½
---	---	----

0	10	4
---	----	---

Total loss,

1	8	11½
---	---	-----

OBSERVATIONS.

The year 1766 was almost as remarkable for wetness, as 1765 was for a drought: this extreme moisture brought up a perpetual succession of weeds on most lands; but, notwithstanding the unremitted attention to their destruction, still the crop is a very paltry one, and the loss considerable. If this culture is profitable for raising barley, I know not what can be the means by which it is effected: on my soils, I am confident, it never can. In all the variations under which I have tried it, I have been unable to command the least success. It should however be remarked here, that I expected, from the expence of the keeping this crop clean from weeds, the loss to be more considerable: the high price which the barley yields, has reduced the loss lower than it otherwise would have been.

EXPERIMENT N° 9.

Culture, expences, and produce, of 10 perches, field M*, 1766.

CULTURE.

These perches were cropped last year with drilled turneps, in the perfection of tillage and manure, which were drawn for cattle in february. Reversed and arched up the ridges, (five feet ones) by two ploughings the first week in march, and drilled them each with 3 rows of barley, 8 inches asunder, using half a peck. May 17th, hand-hoed the rows, being before prevented by the rain. The first week in june, gave the first horse-hoeing, and hand-weeded the rows. The middle of the same month, hand-hoed them again; and soon after horse-hoed them for the second time. The 24th, gave the third horse-hoeing. The 8th of july repeated it, and soon after hand-weeded the rows again. Reaped, august 21st. The produce, two pecks and an half.

[E e e 2]

EXPENCES.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Harrowing,	0	0	4
Drilling,	0	0	3½
Seed,	0	5	0
Four horse-hoeings,	0	2	8
Two hand-hoeings,	0	6	6
Two hand-weedings,	0	2	3
Reaping,	0	2	3
Harvesting, &c.	0	1	4
Threshing,	0	1	8
	1	4	3½
Rent, &c.	0	17	0
	2	1	3½

PRODUCE.

Ten bushels, at 24 s.	1	10	0
Loss,	0	11	3½

	£.	s.	d.
Ploughing,	0	4	9½
Harrowing,	0	0	9
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6½
	0	10	4
Total loss,	1	1	7½

OBSERVATIONS.

The soil of this field, in so extreme wet a year, may easily be supposed more favourable to the production of barley, than that of moister ones.—Drilled corn of all sorts lies drier than most broad-cast; the five-feet ridges being arched up by one ploughing, and the rows on the crown of each, they are perfectly drained by the furrows; so that, with such an advantage in a wet year, if the corn does not thrive, it can only be owing to the culture being quite improper. With wheat, my success has been better; but I have always found those stalks much stronger, and consequently better able to support themselves, than the stalks of barley. In every crop, the operations of horse and hand-hoeing damage the rows; and this has been particularly the case this year: after turning a furrow from the rows, a heavy shower of rain has more than once made sad havock with the plants. This piece would, I am extremely confident, have produced a vast crop of any

any thing in the broad-cast method of sowing, for it was remarkably clean of weeds, and full of the richest manure: losing products in such cases must surely prove the merit of any culture.

EXPERIMENT N° 10.

Culture, expences, and produce, of ten perches, field L*, 1766.

CULTURE.

This piece yielded horse-hoed beans in 1765, in complete management of both tillage and manure. I marked it for barley, designing to try what crop I should be able, by drilling, to gain with the assistance of much manure, but without the expence of a year's fallow. With this view, I reversed the ridges (5 feet ones) and arched them up by two ploughings, the beginning of march: I then spread 3 bushels of malt-dust over them, harrowed it in, and drilled 3 rows of barley on the top of each ridge 8 inches asunder, using half a peck of seed. The plants rose very favourably. May 17th, hand-hoed the rows. Much rain succeeded through the end of the month. In June, horse-hoed them thrice, hand-hoed once, and hand-weeded once. July 11th, horse-hoed for the last time. The 19th, hand-weeded again. Reaped, August the 20th. Product, 1 bushel and quarter of a peck.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Harrowing,	0	0	4
Manuring,	1	19	6
Drilling,	0	0	3½
Seed,	0	5	0
Four horse-hoeings,	0	2	8
Two hand-hoeings,	0	7	0
Two hand-weedings,	0	2	6
Reaping,	0	3	0
Harvesting, &c.	0	1	2
Threshing,	0	3	0
	3	6	5½
Rent, &c.	0	17	0
	4	3	5½

PRODUCE.

Seventeen bushels, at 25s.	2	13	1½
Loss,	1	10	4

				£.	s.	d.
Brought over, loss,				-	-	-
						1 10 4½
				£.	s.	d.
Ploughing,	-	-	-	0	4	9½
Harrowing,	-	-	-	0	0	9
Manuring,	-	-	-	0	7	9½
Drilling,	-	-	-	0	0	3
Horse-hoeing,	-	-	-	0	4	0
Carting in harvest,	-	-	-	0	0	6½
				<hr/>		
					0	18 1½
Total loss,				-	-	-
						<hr/>
					2	8 5½

OBSERVATIONS.

Every advantage that can well be conceived, unite in this crop to form a very advantageous one; and yet the loss almost equals what the profit ought to be. This barley had a fine appearance for some time after it was up; but when it arose to a certain height, and the horse-hoeing furrows were open, the least bad weather made it fall and entangle, and the beauty of the appearance was presently over. Another circumstance, which should not be overlooked, is the small advantage arising from the manure; at least as we may conceive from the product of the unmanured crops: the plants occupy so small a part of the soil, that they cannot draw the virtue of the manure from the intervals. This is contrary to reason; for one would naturally conceive, that the operation of horse-hoeing, which at times banks up the ridges and clears the furrows of all the loose moulds, would give the roots of the corn a free and well-placed pasture to feed in; yet experience contradicts this idea, however apparently well-founded.

EXPERIMENT N° II.

Culture, expences, and produce, of sixty perches, in six divisions,
field L*, 1766.

CULTURE.

These sixty perches yielded horse-hoed turneps, in common management, in 1765; which were drawn for cattle in january and february. By three ploughings I laid the land in fresh positions, and drilled it the 14th of april after harrowing—as follows:

- N° 1. Ploughed flat, and drilled in equally distant rows 1 foot asunder.
2. Ditto on to 4-feet ridges, and drilled with 2 rows 1 foot asunder.
3. Ditto on to 5-feet ridges, 3 rows 1 foot asunder.
4. Ditto on to 5-feet ridges, 4 rows 8 inches asunder.
5. Ditto on to 6-feet ridges, 3 rows 1 foot asunder.
6. Ditto on to 3-feet ridges, a single row on each.

Sowed each with half a peck of seed. May 15th, hand-hoed them all.
June 5th, horse-hoed all, except N° 1. The 10th, hand-hoed them again.
The

The 17th, horse-hoed them for the second time. The 25th, hand-weeded them. The 30th, the third horse-hoeing. July 8th, hand-weeded them again; and the 15th, the last horse-hoeing. August 25th, mowed N^o 1, and reaped the rest. The product,

N^o 1. Two bushels.

2. Three pecks and an half.

3. One bushel and half a peck.

4. One bushel and a peck and half.

5. Three pecks and one quarter.

6. Two pecks and three quarters.

ACCOUNT of N^o 1.

EXPENCES.

	£.	s.	d.
Three ploughings,	-	-	0 3 0
Harrowing,	-	-	0 0 8
Drilling,	-	-	0 0 6
Seed,	-	-	0 5 0
Water-furrowing,	-	-	0 1 0
Two hand-hoeings,	-	-	0 14 0
Two hand-weedings,	-	-	0 5 9
Mowing,	-	-	0 1 2
Harvesting,	-	-	0 2 0
Threshing,	-	-	0 6 0
			<hr/>
			1 18 1
Rent, &c.	-	-	0 17 0
			<hr/>
			2 15 1

PRODUCE.

	£.	s.	d.
Four quarters, at 25s.	-	-	5 0 0
Expences,	-	-	2 15 1
			<hr/>
Profit,			2 4 11
	£.	s.	d.
Ploughing,	0	7	2 1/4
Harrowing,	0	1	6
Drilling,	0	0	5
Carting in harvest,	0	0	6 1/2
			<hr/>
			0 9 7 1/4
			<hr/>
Clear profit,			1 15 3 1/4

ACCOUNT

ACCOUNT of N° 2.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Drilling,	0	0	4½
Seed,	0	5	0
Two hand-hoeings,	0	4	0
Two hand-weedings,	0	3	6
Four horse-hoeings,	0	3	0
Reaping,	0	3	3
Harvesting, &c.	0	1	4
Threshing,	0	2	6

Rent, &c.	1	6	3½
	0	17	0

2	3	3½
---	---	----

PRODUCE.

	£.	s.	d.
Fourteen bushels, at 25s.	2	3	9
Expences,	2	3	3½
Profit,	0	0	5½

	£.	s.	d.
Ploughing,	0	7	2¼
Harrowing,	0	0	9
Drilling,	0	0	3¾
Horse-hoeing,	0	4	10
Carting in harvest,	0	0	6½
The above profit,	0	13	7½
Loss,	0	0	5½
	0	13	2

ACCOUNT of N° 3.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Drilling,	0	0	3½
Seed,	0	5	0
Two hand-hoeings,	0	6	9
Two hand-weedings,	0	4	6
Four horse-hoeings,	0	2	8
Carried over,	1	2	6½

Brought over,
Reaping,
Harvesting, &c.
Threshing,

£.	s.	d.
1	2	6½
0	3	9
0	1	6
0	3	0

Rent, &c.

1	10	9½
0	17	0
2	7	9½

PRODUCE.

Eighteen bushels, at 25s.

Expences,

£.	s.	d.
2	16	3
2	7	9½
0	8	5½

Profit,

Ploughing,
Harrowing,
Drilling,
Horse-hoeing,
Carting in harvest,

£.	s.	d.
0	7	2½
0	0	9
0	0	3
0	4	0
0	0	6½

0	12	8½
0	8	5½
0	4	3½

The above profit,

Loss,

ACCOUNT of N° 4.

EXPENCES.

Three ploughings,
Harrowing,
Drilling,
Seed,
Two hand-hoeings,
Two hand-weedings,
Four horse-hoeings,
Reaping,
Harvesting, &c.
Threshing,

£.	s.	d.
0	3	0
0	0	4
0	0	7
0	5	0
0	11	8
0	5	3
0	2	8
0	4	0
0	1	6
0	3	8

Rent, &c.

1	17	8
0	17	0
2	14	8

G R A I N.
P R O D U C E.

Book I.

Twenty-two bushels, at 25s.

Expences,

Profit,

£. s. d.

3 8 9
2 14 8

0 14 1

£. s. d.

Ploughing,

Harrowing,

Drilling,

Horse-hoeing,

Carting in harvest,

0 7 2 $\frac{1}{4}$

0 0 9

0 0 6

0 4 0

0 0 6 $\frac{1}{2}$ 0 12 11 $\frac{1}{4}$

Clear profit,

0 1 1 $\frac{1}{4}$ A C C O U N T of N^o 5.

E X P E N C E S.

Three ploughings,

Harrowing,

Drilling,

Seed,

Two hand-hoeings,

Two hand-weedings,

Four horse-hoeings,

Reaping,

Harvesting, &c.

Threshing,

£. s. d.

0 3 0

0 0 4

0 0 3 $\frac{1}{2}$

0 5 0

0 3 6

0 2 3

0 2 0

0 2 9

0 1 0

0 2 2

1 2 3 $\frac{1}{2}$

Rent, &c.

0 17 0

1 19 3 $\frac{1}{2}$

P R O D U C E.

Thirteen bushels, at 25s.

Expences,

Profit,

£. s. d.

2 0 7 $\frac{1}{2}$ 1 19 3 $\frac{1}{2}$

0 1 4

£. s. d.

Ploughing,

Harrowing,

Drilling,

Horse-hoeing,

Carting in harvest,

0 7 2 $\frac{3}{4}$

0 0 9

0 0 3

0 3 3

0 0 6 $\frac{1}{2}$ 0 11 11 $\frac{1}{4}$

	£.	s.	d.
Brought over, expences,	0	11	11½
Ditto, profit,	0	1	4
Loss,	0	10	7½

ACCOUNT of N° 6.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Drilling,	0	0	6
Seed,	0	5	0
Two hand-hoeings,	0	2	0
Two hand-weedings,	0	1	6
Four horse-hoeings,	0	4	0
Reaping,	0	1	6
Harvesting, &c.	0	0	8
Threshing,	0	1	10

Rent, &c.	1	0	4
	0	17	0
	1	17	4

PRODUCE.

Eleven bushels, at 25s.	1	14	4½
Loss,	0	2	11½

	£.	s.	d.
Ploughing,	0	7	2¼
Harrowing,	0	0	9
Drilling,	0	0	5
Horse-hoeing,	0	6	6
Carting in harvest,	0	0	6½

	0	15	4¾
Total loss,	0	18	4¼

	£.	s.	d.
Profit by the equally different rows 1 foot,	1	15	3¼
Ditto by four rows on 5 feet ridges,	0	1	1¼
Former superior by	1	14	2

£. s. d.

Profit by equally distant,	-	-	-	1	15	3 $\frac{1}{4}$
Loss by two rows on four feet ridges,	-	-	-	0	13	2 $\frac{1}{2}$
Former superior by	-	-	-	2	8	5 $\frac{1}{2}$
Profit by equally distant,	-	-	-	1	15	3 $\frac{1}{4}$
Loss by three rows on five feet ridges,	-	-	-	0	4	3 $\frac{1}{4}$
Former superior by	-	-	-	1	19	6 $\frac{1}{2}$
Profit by equally distant,	-	-	-	1	15	3 $\frac{1}{4}$
Loss by three rows on six feet ridges,	-	-	-	0	10	7 $\frac{1}{4}$
Former superior by	-	-	-	2	15	11 $\frac{1}{2}$
Profit by equally distant,	-	-	-	1	15	3 $\frac{1}{4}$
Loss by equally distant three feet,	-	-	-	0	18	4 $\frac{1}{2}$
Former superior by	-	-	-	2	13	7 $\frac{1}{2}$
Profit by four rows on five feet ridges,	-	-	-	0	1	1 $\frac{1}{4}$
Loss by two rows on four feet ridges,	-	-	-	0	13	2
Former superior by	-	-	-	0	14	3 $\frac{1}{4}$
Profit by four rows on five feet ridges,	-	-	-	0	1	1 $\frac{1}{4}$
Loss by three rows on five feet ridges,	-	-	-	0	4	3 $\frac{1}{4}$
Former superior by	-	-	-	0	5	4 $\frac{1}{2}$
Profit by four rows on five feet ridges,	-	-	-	0	1	1 $\frac{1}{4}$
Loss by three rows on six feet ridges,	-	-	-	0	10	7 $\frac{1}{4}$
Former superior by	-	-	-	0	11	9
Profit by four rows on five feet ridges,	-	-	-	0	1	1 $\frac{1}{4}$
Loss by equally distant three feet,	-	-	-	0	18	4 $\frac{1}{2}$
Former superior by	-	-	-	0	19	5 $\frac{1}{2}$
Loss by equally distant three feet,	-	-	-	0	18	4 $\frac{1}{2}$
Ditto by three rows on six feet ridges,	-	-	-	0	10	7 $\frac{1}{4}$
Latter superior by	-	-	-	0	7	8 $\frac{1}{2}$

Loss

			£.	s.	d.
Loss by equally distant three feet,	-	-	0	18	4½
Ditto by two rows on four feet ridges,	-	-	0	13	2
Latter superior by	-	-	0	5	2½
Loss by equally distant three feet,	-	-	0	18	4½
Ditto by three rows on five feet ridges,	-	-	0	4	3½
Latter superior by	-	-	0	14	1
Loss by two rows on four feet ridges,	-	-	0	13	2
Ditto by three rows on six feet ridges,	-	-	0	10	7½
Latter superior by	-	-	0	2	6½
Loss by two rows on four feet ridges,	-	-	0	13	2
Ditto by three rows on five feet ridges,	-	-	0	4	3½
Latter superior by	-	-	0	8	10½
Loss by three rows on six feet ridges,	-	-	0	10	7½
Ditto by three rows on five feet ridges,	-	-	0	4	3½
Latter superior by	-	-	0	6	4½

OBSERVATIONS.

This experiment, of which I have given so particular a view, I must be allowed to think so far decisive as concerns this soil. Every circumstance of tillage and culture were fairly performed, and at the same time: and the expences peculiar to each mode registered duly. It appears from the trial, that equally distant rows at one foot asunder are by far more profitable than any of the other distances; indeed the profit by that mode of sowing is very considerable, and equalled this year by very few broad-cast crops. But I should remark upon this, that the result is not so favourable to the new husbandry as may at first be thought: I think it rather confirms the event of all these trials. Equally distant rows at one foot approach much nearer to the broad-cast method, than to that of horse-hoeing; indeed it is rather an improvement of it, than a totally new invention. Broad-cast crops admit of hand-hoeing, but not in so easy and complete a manner: and as the distance from row to row is so small, the roots of the plants can draw the nourishment from all the earth.

The product of the other pieces is a farther confirmation of this reasoning; the more the rows, that is, the greater the similarity to the broad-cast, the more considerable the produce: a circumstance which unites with the general result of all these experiments, to prove that wide intervals, respecting

respecting the effect of much air, and of pulverization, by means of horse-hoeing, are of no effect; or, at least, of none answerable to the loss of ground. The wider the intervals (to a certain point), the more completely are these operations performed, and yet their effect is to be discerned by little more than breaking and entangling the crop.

I should, however, remark on the equally distant rows, that the land must for them be laid so very level, that on moist soils the crop will be damaged in wet seasons, unless the water-furrows be uncommonly numerous. The crop, in this experiment, had all that the surface of the land required; but in some other parts of the same field, the expence, instead of one shilling, would have been nearer five. This point of water-furrows varies greatly in all these experiments, which it must ever do, according to the level, or slope of a field. I have always charged them at what they cost, without seeking for a similarity of circumstances, not to be found in any large field in Great Britain. Some pieces cost me nothing, while others are very expensive. It must always be so, and is the case with every farm in the country; but in comparative experiments, this circumstance, like most minute ones, must be attended to. In the trial before us, the piece drilled in equally distant rows would not have required any, had it, like the rest, been ridged.

OBSERVATIONS on the drilled crops of 1766.

The experience of this year unites with that of the two preceding. The new husbandry appears almost uniformly unsuccessful. The variations are not inconsiderable. The crops have had every advantage of tillage and manure. The season has been different from others; and though wet to a degree, yet not a weed has been suffered to grow in any of the trials. Under every circumstance, we find that horse-hoeing is contrary to the nature of the plant, and always attended with loss. The equally distant rows one foot asunder, for the benefit of hand-hoeing and weeding, prove very advantageous, and is a mode which there is reason to have an opinion of, when the soil is suitable.

Had I extended my experiments on drilled barley in these years to whole fields, they would not have been a tenth part so authoritative; but my loss would have been immense. I find from my trials of various sorts, that many thousands of pounds would be requisite for no great number of large experiments; and, what is much worse, I begin to find that I must contract even my small ones, or they will swallow too much of my small fortune. The expence of them is immense. Had I the riches requisite, I should not fear reducing every part of agriculture on my soils to mathematical demonstration; not by comparative experiments in large, for I have often remarked their being of no authority; but by increasing and varying those in small: the idea, however, is too great for such weak powers.

E X P E -

EXPERIMENT N° 12.

Culture, expences, and produce, of ten perches, field L*, 1767.

CULTURE.

Yielded horse-hoed turneps in perfection of tillage and manure in 1766, on five feet ridges. Reversed the ridges, and arched them up by two ploughings, the first fortnight in march; and directly drilled them each with three rows one foot asunder, using half a peck of seed. The middle of may, gave the first horse-hoeing; and hand-hoed the rows again the last week. In june, I horse-hoed twice more, hand-hoed once, and weeded once. The season was so extremely showery, that the weeds came up at an uncommon rate; so that a perpetual attention was necessary, to keep them under. The beginning of july, I gave the last horse-hoeing; and soon after hand-weeded the rows again. Reaped the middle of august. The product, three pecks. Proportions *per* acre:

EXPENCES.					£.	s.	d.
Two ploughings,	-	-	-	-	0	2	0
Harrowing,	-	-	-	-	0	0	4
Drilling,	-	-	-	-	0	0	3½
Seed,	-	-	-	-	0	6	3
Water-furrowing,	-	-	-	-	0	0	6
Four horse-hoeings,	-	-	-	-	0	2	8
Three hand-hoeings,	-	-	-	-	0	11	3
Two hand-weedings,	-	-	-	-	0	3	3
Reaping,	-	-	-	-	0	2	9
Harvesting, &c.	-	-	-	-	0	1	4
Threshing,	-	-	-	-	0	2	3
					<hr/>		
					1	12	10½
Rent, &c,	-	-	-	-	0	17	0
					<hr/>		
					2	9	10½

PRODUCE.					£.	s.	d.
Twelve bushels, at 23 s.	-	-	-	-	1	14	6
					<hr/>		
Loss,	-	-	-	-	0	15	5½
					<hr/>		
Ploughing,	-	-	-	-	0	4	10½
Harrowing,	-	-	-	-	0	0	9
Drilling,	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	0	4	0
Carting in harvest,	-	-	-	-	0	0	6½
					<hr/>		
					0	10	5
					<hr/>		
Total loss,	-	-	-	-	1	5	10½

	£.	s.	d.
Brought over,	1	4	6½
Harvesting, &c.	0	1	6
Threshing,	0	2	2
	<hr/>		
	1	8	2½
Rent, &c.	0	17	0
	<hr/>		
	2	5	2½

PRODUCE.

Eleven bushels, at 23 s.	11	11	7½
Loss,	0	13	7

	£.	s.	d.
Ploughing,	0	4	10½
Harrowing,	0	0	9
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6½
	<hr/>		
	0	10	5
Total loss,	1	4	0

OBSERVATIONS.

This crop was, I believe, somewhat damaged by weeds springing up after the last cleaning, for want of another hand-hoeing; but many of the stalks were so bent and broken down about the intervals, that the mens walking through them would have done more mischief than good by the hoeing. This is an inconvenience absolutely annexed to the grain, arising from the nature of it. I think it somewhat remarkable, that, vary my experiments on horse-hoed barley as much as I will, yet I can bring profit from none; and I am the more surprized at my ill success from reading of others trials, that have been remarkably successful. Soils, it is true, vary greatly; and the skill of other cultivators, doubtless, much exceeds mine: but I have no reason to attribute my ill success to the nature of my ground, but that of the plant; and as to skill, I have been so extremely attentive, and so little sparing of expence, that these circumstances might, in most cases, be reckoned an equivalent to the superior ingenuity of others. But such variations, however, cannot be reasoned upon satisfactorily, since there are numerous unthought-of circumstances, that cause a difference of crops, which are either unrelated, or, perhaps, unseen.

EXPERIMENT No 4.

Culture, expenses, and produce, of ten perches, field M*, 1767.

CULTURE.

This piece received its first tillage in autumn 1765, when it was thrown on to the ridge. During the year 1766, it received eight ploughings more, the last of which again threw it on to the ridge. In march 1767, ploughed it flat by the tenth earth; and harrowing it fine, drilled it in equally distant rows one foot asunder, using half a peck of seed. Hand-hoed the rows at such times as the wetness of the following season would allow, four times in all; besides, once hand-weeded them. Mowed it the middle of august. The product, one bushel two pecks and three quarters. The proportions *per acre* as follows:

EXPENCES.

	£.	s.	d.
Ten ploughings,	0	10	0
Three harrowings,	0	0	6
Water-furrowing,	0	0	3
Drilling,	0	0	6
Seed,	0	6	3
Four hand-hoeings,	1	1	6
One hand-weeding,	0	2	3
Mowing,	0	1	3
Harvesting, &c.	0	2	3
Threshing,	0	5	7
Rent, &c.	2	10	4
	1	14	0

PRODUCE.

Three quarters three bushels, at 23s.	4	6	3
Expences,	4	4	4

Profit,	0	1	11
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	£.	s.	d.
Ploughing,	1	4	4½
Harrowing,	0	0	9
Drilling,	0	0	6
Carting in harvest,	0	0	6

The above profit,	0	1	11
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Loss,	1	4	2
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OBSER.

OBSERVATIONS

The ill success of this crop surprized me: some of the preceding experiments gave me great expectations of the equally distant rows, when so near as to resemble the broad-cast sowing; and this soil is so dry, that the expence of water-furrowing is a trifle, and the want of more was not perceived. The product of the crop is not amiss; three quarters three bushels being, in this neighbourhood, this year, reckoned large; but the aggregate of expences is so high, that it must have been much higher to have answered. The two years fallow is not alone the point that raises the expence; for if we deduct a year's rent, still the crop will be a losing one; nor is it the hand-hoeing alone; for that *all* deducted will not convert the loss to profit. It is the total of all sorts that has this effect.

EXPERIMENT N° 15.

Culture, expences, and produce, of ten perches, field M*, 1767.

CULTURE.

This piece yielded horse-hoed pease in 1766, of the white boiling sort, and in the perfection of tillage and manure. I marked the piece after harvest, with design to see if my utmost endeavours could not produce a great crop of barley in the horse-hoeing method. It was ploughed three times last autumn, the last of which turned in a load and half of rotten farm-yard dung, that had been well mixed together. The beginning of march 1767, stirred it again, throwing it on to five feet ridges, and soon after arched them up, and harrowed in three bushels of malt-dust: drilled four rows of barley on the crown of each ridge, eight inches asunder, using half a peck of feed. I was particularly attentive throughout all the following wet season to keep this experiment, literally speaking, free from weeds. I horse-hoed it four times, hand-hoed it thrice, and gave it two hand-weedings. The middle of august reaped it. The product, one bushel and one peck. Proportions *per* acre as follows:

EXPENCES.						£.	s.	d.
Five ploughings,	-	-	-	-	-	0	9	00
Harrowing,	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	0	0	9
Seed,	-	-	-	-	-	0	6	3
Four horse-hoeings,	-	-	-	-	-	0	2	8
Cost and labour, manuring,	-	-	-	-	-	2	3	0
Three hand-hoeings,	-	-	-	-	-	0	12	6
Two hand-weedings,	-	-	-	-	-	0	4	9
Reaping,	-	-	-	-	-	0	3	0
Carried over,						3	18	03

but is in barley much abated by the damage the latter operations do the crop.
 This year, like the preceding ones, I found it extremely difficult to
 almost the destruction of some acres by the last horse and hand-hoe.
 every mode of drilling for the horse-hoe, the barley falls into the
 bedding and entangling every way; inasmuch that the horses cannot move
 without destroying much of it. This is an inconvenience, which I have
 decidedly remarked to exist not a little when the intervals are not being
 at all, from the natural weakness of the stalks: but when in horse-hoeing
 the plough goes pretty near the rows, as it ought always to do if we expect
 benefit from the operation, the roots are somewhat loosened, and the evil
 becomes much greater. This is the case with the corn, and the
 five inches, and often if it goes to near only as six inches. Wheat, though
 the stalks are far weaker than those of beans, supports itself pretty well, so
 that the damage from horse-hoeing is inconsiderable. I do not at present
 recollect any who has practised the new husbandry, that
 complaint; which would surprise me. Several have mentioned the
 spectacle which rows of corn present; which is true with barley,
 young; but when it is three-fourths and full-grown, it is the very
 all sprawling about broken and entangled, exhibiting a most
 agreeable object to the eye, which, from its
 and this is like the application to horse-hoe wheat.

Observations.
If any crop of horse-hoed barley could have turned out beneficial, I think it would have been this; for almost every advantage that could be devised here centered to bring forth a great produce: with so much manuring, I am not surprized at the loss in money, so much as at the smallness of the produce. Four rows occupy a considerable space in proportion to the whole surface; consequently the crop, on the principles of the equally distant rows and broad-cast modes of sowing, ought to have been great; but the contrary is the case, and is one proof, among many others, how little we are to depend in matters of husbandry on reason.

Observations on the drilled crops of 1767.
This year, in point of weather, much resembled the year 1766. It was remarkably wet, and the weeds consequently arose with unabated fury. In such a season, the drill-husbandry has one great advantage: by means of the spaces between the rows, there is a good opportunity of extirpating these hydra-headed enemies. The expence, it is true, is enormous; but then the work cannot, without prodigious difficulty, be done in the broad-cast method at all. This, with some drilled crops, is a benefit of the noblest kind:

but is in barley much abated by the damage the latter operations do the crop. This year, like the preceding ones, I found it extremely difficult to prevent almost the destruction of some acres by the last horse and hand-hoeing. In every mode of drilling for the horse-hoe, the barley falls into the intervals bending and entangling every way; insomuch that the horses cannot move without destroying much of it. This is an inconvenience, which I have accidentally remarked to exist not a little when the intervals are not ploughed at all, from the natural weakness of the stalks: but when in horse-hoeing the plough goes pretty near the rows, as it ought always to do if we expect benefit from the operation, the roots are somewhat loosened, and the evil becomes much greater. This is the case generally, if it roots nearer than five inches, and often if it goes so near only as six inches. Wheat, though the stalks are far weaker than those of beans, supports itself pretty well; so that the damage from horse-hoeing is inconsiderable. I do not at present recollect any writer, who has practised the new husbandry, that makes toll complaint; which much surprizes me. Several have mentioned the agreeable spectacle which clean rows of corn present; which is true with barley while young; but when it is three-fourths and full-grown, it is the very reverse: all sprawling about, broken and entangled, exhibiting a much more disagreeable object than a broad-cast field, which, from its thickness, is level, and this is likewise applicable to horse-hoed wheat.

But the product, and profit or loss, of any mode of husbandry, are the points that alone deserve a serious consideration. We find from all these crops, that horse-hoeing of barley, on these soils, is a most ridiculous custom; totally contrary to the nature of the plant, and highly unprofitable. The old practice is that which is to be followed by those who consult profit in their agriculture: and much is it to be wished, that those gentlemen who give their attention to husbandry would practise such modes as may probably become serviceable to their country. In such a scheme, the new husbandry may come in for a place, but undoubtedly not in the culture of barley, drilled crops of which make so contemptible a figure, that I should be much surprized if any farmer that had ever seen one should for a moment entertain a thought of buying a drill-plough: or rather not execrate it, as an invention of folly itself.

I have no conception, that a mode of sowing could turn out so uniformly unsuccessful during four years, and in so many variations, if it was not worthless: but I repeat again, that I confine myself in these reflections to my own soils. I leave it to the reader to judge of the probability of profit from varying the soil: I have no notion of horse-hoed barley answering on any soil, without a much greater degree of skill than I possess; or much more perfect instruments.

One circumstance I omitted speaking to, throughout the preceding trials: it is, the fine state the soil is left in after a horse-hoed crop. This is the subject of many harangues in the writings of the practisers of this husbandry.

In

In profitable crops. I think it a most important circumstance: but nothing, when every crop is unprofitable. Of what use is all the cleaning in the world; all the manure, tillage, weeding, and labour, that can be bestowed on the soil, if it is never to repay the expences? It matters not a groat to say, that my land is in excellent order, if I am bound to crop it in a mode that will never give a profitable crop. The longer barley is drilled in the same field, the greater the loss sustained, till millions are wasted. If it be said, that a horse-hoed crop of barley is a preparation for any thing else, either in the old or new husbandry, I answer, that it is inferior to a fallow, far—far inferior to it. Walk into a drilled field of barley, and behold the multitudes of weeds at harvest. I have given four horse-hoeings, three hand-hoeings, and three weedings, and yet found many weeds in the crops at harvest. With barley, it is impossible to extirpate them. You cannot get into the intervals at last, without destroying the crop; the weeds then spring up, and your field, be assured, will, after reaping, exhibit a very different appearance from a summer fallow.

But it is not only in the destruction of weeds that horse-hoed barley is so much inferior to common fallowing; it is the same in pulverization: compared to a fallow, that of horse-hoeing is contemptible. Above a third of the field is seldom touched at all by the plough; instead of which, hand-hoeing is extremely deficient. Now, upon what principles such a culture can be compared to a clean fallow, I know not. Further; one of the most important operations of a fallow, is the cross-ploughing: those are the best farmers who likewise angle-plough it, that is, from corner to corner. Nothing of this can be done in a horse-hoed crop: upon the whole, we may from reason, as well as experience, determine, that a horse-hoed crop of barley is not comparable to a fallow as a preparation for a crop, in respect both of clearing the land from weeds, and pulverizing it.

Some crops enrich and mellow the ground so much, as to be preferable to a fallow: but this is far enough from being the case with horse-hoed barley, which sprawls about the soil, and admits the sun-beams to every inch of the surface. Another circumstance, which should not be forgotten, is the vast attention and trouble that opens upon the farmer, upon converting his fallows into horse-hoed crops of barley. A fallow requires scarce any attention; the ploughs take it in course, and all the tillage is regularly performed. How amazingly different from a crop that requires an infinity of labour, and an endless attention!—drilling, horse and hand-hoeing, weeding, reaping, carting, &c. &c. and all for a much worse effect than that of a plain fallow! Under such accumulated disadvantages, the trifling product from the horse-hoed fallow (which, by the bye, is always loss) is an object that deserves not to be named.

Thus

Thus much is necessary, in answer to such as dwell on the fine state the land is left in after horse-hoeed barley: they compare it to broad-cast barley; whereas it ought (in that view) to be compared to a fallow, which so far exceeds it. If the parallel is drawn between it and broad-cast barley, other circumstances come into the account, that have nothing to do with our present enquiry; such as a crop of clover left upon the land after the broad-cast barley; a weight which makes the scale of horse-hoeing kick the beam.

Let us in the next place take a view of the preceding experiments under different heads. The first point to be examined is,

EXPENCES.		£.	s.	d.	
Experiment No.					per acre.
1.		4	8	4	1 1/4
2.		4	6	1	1 1/4
3.		4	4	9	1 1/4
4.		4	2	3	1 1/4
5.		6	15	11	1 1/4
6.		2	8	2	1 1/4
7.	(1)	3	18	9	1 1/4
	(2)	4	1	1	1 1/4
	(3)	4	0	4	1 1/4
8.		2	15	11	1 1/4
9.		2	11	7	1 1/4
10.		5	1	6	1 1/4
11.	(1)	3	4	8	1 1/4
	(2)	2	16	11	1 1/4
	(3)	3	0	6	1 1/4
	(4)	3	7	7	1 1/4
	(5)	2	11	3	1 1/4
	(6)	2	12	8	1 1/4
12.		3	0	3	1 1/4
13.		2	15	7	1 1/4
14.		5	10	5	1 1/4
15.		7	1	8	1 1/4
Average,	3/17s. 1d.	84	17	0	

PRICES of the PRODUCT.

	£.	s.	d.
In 1764,	1	0	0
In 1765,	1	0	0
In 1766,	1	4	6
In 1767,	1	3	0
Average, 1/1s. 10d.			
	From		

From which it appears, that 3 qrs. 2 bushels are the crop exactly sufficient to pay the expences of culture.

In the above table, the following numbers are crops that were manured for :

			£.	s.	d.
N ^o 5.	-	-	6	5	11
10.	-	-	5	1	6½
15.	-	-	7	1	8
Average, 6l. 6s. 4½d.			18	19	1½

Five quarters six bushels, the crop that just pays this expence.

			£.	s.	d.
Total of all the crops,	-	-	84	17	0
Ditto manured,	-	-	18	19	1½
Unmanured,	-	-	65	17	10½

Average, 3l. 9s. 4d.

Three quarters one bushel just pay this expence.

	PRODUCE.	Q.	B.	P.
Experiment N ^o 1.	-	2	0	0
2.	-	2	2	0
3.	-	2	5	0
4.	-	1	5	0
5.	-	2	7	0
6.	-	2	2	0
7.—(1)	-	1	4	0
—(2)	-	2	0	0
—(3)	-	1	6	0
8.	-	1	1	0
9.	-	1	2	0
10.	-	2	1	0
11.—(1)	-	4	0	0
—(2)	-	1	6	0
—(3)	-	2	2	0
—(4)	-	2	6	0
—(5)	-	1	5	0
—(6)	-	1	3	0
12.	-	1	4	0
Carried over,	-	38	5	0

Brought over, - - - - -

Experiment N^o 13.

14.

15.

Average, 22. 0 B. 2 P.

Average saving crop,

Ditto produce,

Ditto loss,

These crops falling short of a re-payment of the expence of culture, by nine bushels and an half *per* acre, is a point which should be attended to by those who may argue against certain particularities in the management or soil: they are so far short of being profitable, that in all probability every circumstance of that sort remedied (supposing all to be *real*, not *imaginary*, disadvantages or mistakes) would yet leave the balance on the losing side. When the profit or loss of a crop is very trifling, it may easily be supposed, that a small variation in soil or management would have been attended with a change in the balance; but that is not altogether the case, when the loss is so very considerable on an average of so many trials in different seasons.

PROFIT and Loss.

Experiment N^o 1.

Loss *per* acre,

2.

3.

4.

5.

6.

7.-(1)

-(2)

-(3)

8.

9.

10.

11.-(2)

-(3)

-(5)

-(6)

12.

£. s. d.

2 8 2½

2 1 1½

1 12 3½

2 9 9½

3 18 5

1 3 2½

2 8 9½

2 1 1½

2 5 4½

1 8 11½

1 1 7½

2 8 5¼

0 13 2

0 4 3¼

0 10 7½

0 18 4½

1 5 10½

Carried over, £

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		£.	s.	d.
Brought over,	-	28	19	9½
13.	-	1	4	0
14.	-	1	4	2½
15.	-	4	4	2
Average, 1l. 15s. 1d.		35	12	2

Profit, Experiment N° 11.—(1)	-	1	15	3½
—(4)	-	0	1	1½

Average, 18s. 2¼d.		1	16	4½
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Totals of losfs,	-	35	12	2
Ditto profit,	-	1	16	4½

Losfs on 22 acres,	-	33	15	9½
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Which is, *per acre*, 1l. 10s. 8d.

		£.	s.	d.
Total losfs,	-	35	12	2
Losfs on the manured crops.				
N° 5.	-	3	18	5
10.	-	2	8	5¼
15.	-	4	4	2
		10	11	0¼

Losfs by the unmanured,	-	25	1	1¾
-------------------------	---	----	---	----

Which is, *per acre*, 1l. 6s. 4d.

Average ditto *per acre* of the manured, 3l. 10s. 4d.

That the horse-hoed crops might in every case have perfect fair play, I have not separated the drills in equally distant rows for hand-hoeing, which is an advantage upon the whole that by no means belongs to horse-hoeing; since that method will on most soils, and in most seasons, *ceteris paribus*, produce much greater crops: but notwithstanding any such advantage, we clearly find that the average losfs, by 22 crops—no trifling number—is considerable; this upon a medium of all sorts of culture.

I am not at all surprized that those manured for should be attended with so considerable a losfs as 3l. 10s. 4d.; it plainly appeared from the respective registers, that the barley in rows was not by many degrees proportionally benefited by the manure. When the latter is spread over the whole surface (as was the case with these experiments), the roots, I apprehend, have not the power of feeding in the intervals that are wide enough for horse-hoeing;

hoeing; and consequently cannot possess near so great a share of the manure; whereas in the broad-cast method, no particle of manure can be more than an inch or two from the center of a root of barley. Certain experiments, I am sensible, have been tried on barley among the other grains, to discover the length to which the roots will run: grains have been sown in water and in finely-sifted mould, to discover the bias of nature; but it should be considered, that no field, however rich and fine, nearly equals the pulverization of sifting, or affords so penetrable a sheath for roots as water. Conclusions from such experiments should not be too hastily drawn, and reasoned upon by analogy to field-husbandry. Barley-roots may possibly be produced a yard long: but as it is an utter impossibility to do the same with plants in a ploughed field, no determination can from thence be drawn. But, supposing this fact, how do we know that a plant draws its nourishment from such wide-extended roots in the degree that is requisite for reaping an adequate benefit from manure? It may be said in return, that nature does nothing in vain; and that the very power of throwing off such roots reasonably implies the utility they are to be of in drawing nourishment: this cannot be wholly disallowed; and yet the undoubted fact of plants taking in their poison as well as nutriment seems in some measure to weaken the reasoning. But this is not the point: that they may in certain cases draw nourishment from every fibre, is not disputed; but that they draw it powerfully enough to render manure in the intervals, at two feet distance from the plants, as beneficial as if but two inches from it, is what these experiments totally contradict: and this is the only part of the question that really concerns the present enquiry. The distant roots drawing nourishment, is not the point, but their taking a quantity sufficient to make a manuring answer in the crop; and this is what we may venture to deny, from repeated experience.

But, besides the manured crops, the much greater number are those unmanured; these contain some that had no manure in any of the preceding years for other crops; and some that followed crops in perfect management, respecting both tillage and manure; that is, the soil full of richness, and quite clean, without the barley-crop having the expence of such improvement charged to its account. All these crops are unprofitable; the loss considerable. The average of that on no less than nineteen of them amounts to 1*l.* 6*s.* 4*d.* *per* acre; or, in other words, a sum sufficient in an extensive course of business to ruin the richest farmer; and this, I apprehend, proves how extremely unprofitable it is to cultivate barley in the horse-hoeing method. There is no doubt but in the common way of sowing most of these crops would have been attended with a considerable profit; consequently the loss is to be attributed alone to the mode employed.

Such repeated ill success is, I apprehend, a sufficient apology for not trying the horse-hoeing culture of barley *in large*. My loss by experimental husbandry

PROFIT and LOSS.

					£.	s.	d.
Loss per acre, N°	1.	-	-	-	2	8	2½
	2.	-	-	-	2	1	1½
	3.	-	-	-	1	12	3½
	4.	-	-	-	2	9	9½
	5.	-	-	-	3	18	5
	7.---(1)	-	-	-	2	8	9½
	---(2)	-	-	-	2	1	1½
	---(3)	-	-	-	2	5	4½
	14.	-	-	-	1	4	2½
Average,	2l. 5s. 5¼d.				20	9	4½

N° 5, the manured one, being deducted, the average is 2l. 1s. 4¼d.

After-Crops.

EXPENCES.

					£.	s.	d.
Experiment N°	6.	-	-	-	2	8	2½
	8.	-	-	-	2	15	11½
	9.	-	-	-	2	11	7½
	10.	-	-	-	5	1	6¾
	11.---(1)	-	-	-	3	4	8¾
	---(2)	-	-	-	2	16	11
	---(3)	-	-	-	3	0	6¼
	---(4)	-	-	-	3	7	7¾
	---(5)	-	-	-	2	11	3¼
	---(6)	-	-	-	2	12	8¾
	12.	-	-	-	3	0	3½
	13.	-	-	-	2	15	7½
	15.	-	-	-	7	1	8
Average,	3l. 6s. 9d.				43	8	9

Of these, N° 10 and 15 were manured; which deducted, the average is 2l. 16s. 10d.

PRODUCE.

Q. B. P.

Experiment N°	6.	-	-	-	2	2	0
	8.	-	-	-	1	1	0
	9.	-	-	-	1	2	0
	10.	-	-	-	2	1	0
Carried over,	-	-	-	-	6	6	0

Brought over,

Experiment N^o 11.---

(1)

---(2)

---(3)

---(4)

---(5)

---(6)

12.

13.

15.

Average, 1ℓ. 7B. 3½P.

Q. B. P.

6 6 0

4 0 0

1 6 0

2 2 0

2 6 0

1 5 0

1 3 0

1 4 0

1 3 0

2 4 0

25 7 0

PROFIT and LOSS.

Loss, per acre, Experiment N^o 6.

8.

9.

10.

11.(2)

(3)

(5)

(6)

12.

13.

15.

ℓ. s. d.

1 3 2½

1 8 11½

1 1 7½

2 8 5¼

0 13 2

0 4 3¼

0 10 7¾

0 18 4¼

1 5 10½

1 4 0

4 4 2

15 2 8½

Profit, Experiment N^o 11.---

---(1)

---(4)

ℓ. s. d.

1 15 3¼

0 1 1¼

1 16 4½

Average, 1ℓ. 4s. 2½d.

13 6 4

N^o 10 and 15 deducted, the average is 14s. 10¼d.

Manured included.

Manured excluded.

ℓ. s. d.

4 12 0¼

3 6 9

1 5 3¼

ℓ. s. d.

4 6 6½

2 16 10

1 9 8½

Expences after a fallow,

Ditto after a crop,

Excess of the former,

		Manured included.			Manured excluded.		
		Q. B. P.					
Product after a fallow,	-	-	2	1	3		
Ditto after a crop,	-	-	1	7	3½		
			<hr/>				
Superiority of the former,	-	-	0	1	3½		
			<hr/>				
			£.	s.	d.		£. s. d.
Loss after a fallow,	-	-	2	5	5¾		2 1 4¼
Ditto after a crop,	-	-	1	4	2½		0 14 10¼
			<hr/>				<hr/>
Excess of the former,	-	-	1	1	3¼		1 6 6

Upon the whole, we may venture to conclude, that the new husbandry in the culture of barley is extremely unprofitable—the expences immoderately great---the product trifling---and the loss consequently alarming: that these disadvantages are in no degree compensated by a horse-hoed field being left in a more pulverized state than a broad-cast one; as the latter method admits of sowing clover, a husbandry particularly beneficial. It is to be hoped, that gentlemen who possess other soils will prosecute the enquiry further, that a general certainty may be acquired. But it is equally to be wished, that no persons who farm for profit, or such soils as mine, attempt the horse-hoeing culture of barley---they will as assuredly be losers.

Hand-hoe the rows the last week in May; and the first in June, horse-hoe them for the first time, turning a furrow from the rows, and throwing up a little ridge in the middle of each interval. In about a week afterwards, hand-hoe them again. The end of the month, gave the second horse-hoeing, and hand-weeded the rows. The operations of cleaning, &c. were finished by the 15th of July, by two more horse-hoings, and one hand-hoeing. The horse-work was very prejudicial to the barley, from its being much beat, broken, and entangled; but I apprehended it highly requisite to keep the intervals perfectly open, at least according to the principles of this culture. They were both in the end of August, the drills reaped, and the broad-cast mown; and being threshed directly, the produce was,

S E C T. III.

COMPARISON between the old and new HUSBANDRY, in the CULTURE of BARLEY.

COMPARATIVE trials are the grand point in experimental husbandry. It is necessary to form numerous single experiments on every vegetable, for the sake of variations, and to include in the general result all probable circumstances; but the most uncertain and disputable points in agriculture, are those which depend on comparison. Among others, the merit of the old and new husbandry, in the culture of every sort of grain and pulse, have long drawn the attention of all Europe; and yet it is a point at this day as much disputed as ever. It has been applied, and with success, to the production of barley; and, by some writers, preferred to the common method. It is the design of the following experiments, to ascertain this comparative merit on the soils which compose this farm.

EXPERIMENT N^o I.

Culture, expences, and produce, of twenty perches, field L*, 1764.

CULTURE.

This piece was ploughed, for the first time, in autumn 1762. In the succeeding spring and summer, it received eight more earths, the last of which threw it on to the ridge for the winter. The tenth stirring was given the middle of march 1764, which threw half of it on to five feet ridges, and the other half on to common three feet ones. The middle of april, ploughed them again, arching up the first, and ploughing and sowing the other, and harrowed both twice; then drilled the five-foot ridges with a treble row of barley on each, eight inches asunder, using half a peck; the broad-cast a peck of seed; and water-furrowed both equally.

Hand-hoed the rows the last week in may; and the first in june, horse-hoed them for the first time, turning a furrow from the rows, and throwing up a little ridge in the middle of each interval. In about a week afterwards, hand-hoed them again. The end of the month, gave the second horse-hoeing, and hand-weeded the rows. The operations of cleaning, &c. were finished by the 12th of july, by two more horse-hoeings, and one hand-hoeing. The horse-work was very prejudicial to the barley, from its being much bent, broken, and entangled; but I apprehended it highly requisite to keep the intervals in perfect order, at least according to the principles of this culture. They were both cut the end of august, the drills reaped, and the broad-cast mown; and being threshed directly, the produce was,

B. P.

The drilled,	-	-	-	-	-	-	0	3	4
The broad-cast,	-	-	-	-	-	-	1	2	4

The proportions *per* acre are as follows:

Broad-cast.
EXPENCES.

							£.	s.	d.
Eleven ploughings,	-	-	-	-	-	-	0	11	0
Harrowing,	-	-	-	-	-	-	0	0	4
Water-furrowing,	-	-	-	-	-	-	0	1	6
Seed,	-	-	-	-	-	-	0	10	0
Sowing,	-	-	-	-	-	-	0	0	6
Mowing,	-	-	-	-	-	-	0	1	3
Harvesting, &c.	-	-	-	-	-	-	0	2	0
Threshing,	-	-	-	-	-	-	0	3	2
							<hr/>		
Rent, &c.	-	-	-	-	-	-	1	9	9
							<hr/>		
							3		
							3		
							9		

PRODUCE.

Three quarters one bushel, at 20 s.	-	-	-	-	-	-	3	2	6
Loss,	-	-	-	-	-	-	0	1	3

							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	16	6
Harrowing,	-	-	-	-	-	-	0	0	4½
Carting in harvest,	-	-	-	-	-	-	0	0	3¾
							<hr/>		
							0		
							17		
							2¼		
							<hr/>		
							0		
							18		
							5¼		

Total loss,	-	-	-	-	-	-	0	18	5¼
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Drilled.

EXPENCES.

	£.	s.	d.
Eleven ploughings,	0	11	0
Harrowing,	0	0	4
Water-furrowing,	0	1	6
Seed,	0	5	0
Drilling,	0	0	3
Four horse-hoeings,	0	2	8
Three hand-hoeings,	0	8	0
One weeding,	0	2	0
Reaping,	0	3	9
Harvesting, &c.	0	1	6
Threshing,	0	1	10½

Rent, &c.

1 17 10½

1 14 0

3 11 10½

PRODUCE.

One quarter seven bushels, at 20 s. 1 17 6

Loss, 1 14 4½

Ploughing, 0 16 6

Harrowing, 0 0 4½

Drilling, 0 0 1½

Horse-hoeing, 0 1 8

Carting in harvest, 0 0 3¾

0 18 11¾

Total loss, 2 13 4½

Loss by the broad-cast, 0 18 5¼

Broad-cast better by 1 14 11

OBSERVATIONS.

This trial, as far as it extends, is decisive in favour of the common method. The difference of loss is very great. It should be observed, that in moist and wet soils, a barley crop is by far the most uncertain that can be cultivated, unless the management is very complete and masterly. Without a rich soil, the product will seldom be found to answer the expence of a fallow. On land that is poor, and out of heart, it ought always to succeed

ceed a fallowed crop, if the farmer looks no further than the barley itself for his advantage. But when the soil is in good heart, or naturally very rich, the increase will very well pay the expence of a year's fallow, for the purpose of bringing it perfectly clean; or if clover is sown with the barley (the case with this broad-cast piece) it certainly answers to take every means to prepare for the crop, because a good husband-man, when a field is thrown into a regular course of crops, looks not to one (particularly the first) for a recompence of his expence, but to all in the course, as the fallow prepares for them all. The horse-hoed barley partakes of this circumstance, but by no means in the same degree; as the crop of clover, that remains after the broad-cast barley is gone, is beyond a doubt a more profitable advance towards future crops than the tillage bestowed on the other barley while growing.

EXPERIMENT N° 2.

Culture, expences, and produce, of twenty perches, field M*, 1764.

CULTURE.

The preparation of this piece, like that of the preceding, consisted of a summer and two winter fallows. It was first ploughed in autumn 1762, and six times more the following spring and summer. In march 1764, stirred it once, throwing one half on to five feet ridges, and the other flat. The first week in april, gave it the last stirring, arching up the ridges, and harrowing them; drilled three rows eight inches asunder on the top of each, using half a peck of seed. Ploughed the other flat again, and harrowed in a peck of seed. The first week in may, hand-hoed the rows, and in a few days after horse-hoed them. Repeated that operation the end of the month; and again the second week in june; hand-hoed it again, and weeded it the same month. The first week in july, horse-hoed it for the last time. The last week in august, reaped it, and mowed the broad-cast at the same time. Product of the first, one bushel; of the latter, two bushels.

Drilled.

EXPENCES.					£.	s.	d.
Nne ploughings,	-	-	-	-	0	9	0
Harrowing,	-	-	-	-	0	0	4
Drilling,	-	-	-	-	0	0	3
Seed,	-	-	-	-	0	5	0
Four horse-hoeings,	-	-	-	-	0	2	8
Two hand-hoeings,	-	-	-	-	0	6	3
One weeding,	-	-	-	-	0	2	0
Reaping,	-	-	-	-	0	3	9
Carried over,	-	-	-	-	1	9	3

	£.	s.	d.
Brought over,	1	9	3
Harvesting, &c.	0	1	3
Threshing,	0	2	9
Rent, &c.	1	12	6
	1	14	0

PRODUCE.

Two quarters, at 20 s.	2	0	0
Loss,	1	6	6

	£.	s.	d.
Ploughing,	0	13	6
Harrowing,	0	0	4½
Drilling,	0	0	1½
Horse-hoeing,	0	1	8
Carting in harvest,	0	0	3¾
Total loss,	0	15	11¾
	2	2	5¾

Broad-cast.
EXPENCES.

	£.	s.	d.
Nine ploughings,	0	9	0
Harrowing,	0	0	4
Seed,	0	10	0
Sowing,	0	0	3
Mowing,	0	1	2
Harvesting,	0	2	6
Threshing,	0	4	0
Rent, &c.	1	7	3
	1	14	0
	3	1	3

PRODUCE.

	£.	s.	d.
Four quarters, at 20 s.	4	0	0
Expences,	3	1	3
Profit,	0	18	9

Ploughing,

	£.	s.	d.
Brought over, profit,	-	-	0 18 9
Ploughing,	0	13	6
Harrowing,	0	0	4½
Carting in harvest,	0	0	3½
			<hr/> 0 14 2½
Clear profit,	-	-	0 3 6½
Loss by the drilled,	-	-	2 5 3½
Profit by the broad-cast,	-	-	0 3 6½
			<hr/> 2 9 10½
Superiority of the latter,	-	-	

OBSERVATIONS.

The same remarks are applicable to the smallness of the profit by the broad-cast crop, as I offered upon the preceding experiment; the profit is very low, if considered merely with a view to itself, but of consequence in the general account of the course. The loss by the drilled is very great; and no wonder, at least to judge by the small experience I have had in this culture, which, from the utmost attention, I cannot conceive to be proper for the production of barley; the weakness of the stalks too much interrupting the operation of horse-hoeing. But the comparison is as decisive as possible; a difference of above two pounds *per* acre between two methods is immense, and especially when the land is left (under clover) in twenty times a more profitable state than after the losing crop, which I apprehend cannot but be the case. I find the farmers in this neighbourhood reckon, when they find a good appearance after the barley of a crop of clover, that the land is in a better situation, and promises more for profit than a summer fallow, not only respecting the next crop, but the wheat of both. However, as superior as the old husbandry appears in this experiment, yet we must not venture to decide from the experience of one year; various repetitions are necessary before certainty is acquired in matters of agriculture.

EXPERIMENT N° 3.

Culture, expences, and produce, of twenty perches, field L*, 1765.

CULTURE.

This piece yielded broad-cast turneps in 1764, which were managed in a common manner. They were drawn for cattle in december and january. In march ploughed it. The first fortnight in april, stirred it twice more; the last of which threw half of it on to five feet ridges, and half on to common three feet ones. The beginning of may, ploughed and sowed the latter with a peck of seed broad-cast, and hand-hoed it three times; at the same

same time arched up the five feet ridges, and harrowing them thrice, drilled three rows one foot asunder on the top of each, using half a peck of seed. It was the second week in June before the corn was high enough to hand-hoe, when it was done, and horse-hoed in a few days after. Before the end of the month, another horse-hoeing, a hand-hoeing, and a hand-weeding, were given. In July, two more horse-hoeings, and another hand-hoeing, rather to loosen the earth than to free it from weeds, the dryness of the season not allowing many of them to grow. The second week in August, mowed the broad-cast, and reaped the drilled. The product

Of the first, one bushel and two pecks.

Of the second, one bushel. Proportion *per* acre as follows:

Broad-cast.					£.	s.	d.
EXPENCES.							
Four ploughings,	-	-	-	-	0	4	0
Three harrowings,	-	-	-	-	0	0	6
Water-furrowing,	-	-	-	-	0	1	2
Seed,	-	-	-	-	0	10	0
Sowing,	-	-	-	-	0	0	6
Mowing,	-	-	-	-	0	1	0
Harvesting, &c.	-	-	-	-	0	1	2
Threshing,	-	-	-	-	0	3	0
					1	1	4
Rent, &c.	-	-	-	-	0	17	0
					1	18	4
PRODUCE.					£.	s.	d.
Three quarters, at 20 s.	-	-	-	-	3	0	0
Expences,	-	-	-	-	1	18	4
Profit,	-	-	-	-	1	1	8
					£.	s.	d.
Ploughing,	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	0	0	6½
Carting in harvest,	-	-	-	-	0	0	6½
					0	5	1½
Clear profit,	-	-	-	-	0	16	7½

Drilled.

Drilled.

EXPENCES.

Four ploughings,	-	-	-	-	-	0	4	0
Three harrowings,	-	-	-	-	-	0	0	6
Water-furrowing,	-	-	-	-	-	0	1	8
Seed,	-	-	-	-	-	0	5	0
Drilling,	-	-	-	-	-	0	0	3
Four horse-hoeings,	-	-	-	-	-	0	2	8
Three hand-hoeings,	-	-	-	-	-	0	8	9
One hand-weeding,	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	0	3	9
Harvesting, &c.	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	0	2	0

Rent, &c.	-	-	-	-	-	1	11	7
						0	17	0
						2	8	7

PRODUCE.

Two quarters, at 20 s.	-	-	-	-	-	2	0	0
Loss,	-	-	-	-	-	0	8	7

						£.	s.	d.
Ploughing,	-	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	-	0	0	6½
Drilling,	-	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	-	0	4	0
Carting in harvest,	-	-	-	-	-	0	0	6½
						0	9	4½

Total loss,	-	-	-	-	-	0	17	11½
Profit by the broad-cast,	-	-	-	-	-	16	7½	
Loss by the drilled,	-	-	-	-	-	0	17	11½
Superiority of the former,	-	-	-	-	-	1	14	7

OBSERVATIONS.

The common husbandry maintains the superiority in this experiment, which has been so considerable in all the preceding ones. The drilled barley is, under every variation, a most unprofitable culture; and these trials, being absolutely comparative, are decisive with regard to the superiority of the common mode. This broad-cast crop is by no means a large one;

same time arched up the five feet ridges, and harrowing them thrice, drilled three rows one foot asunder on the top of each, using half a peck of seed. It was the second week in June before the corn was high enough to hand-hoe, when it was done, and horse-hoed in a few days after. Before the end of the month, another horse-hoeing, a hand-hoeing, and a hand-weeding, were given. In July, two more horse-hoeings, and another hand-hoeing, rather to loosen the earth than to free it from weeds, the dryness of the season not allowing many of them to grow. The second week in August, mowed the broad-cast, and reaped the drilled. The product

Of the first, one bushel and two pecks.

Of the second, one bushel. Proportion *per* acre as follows:

Broad-cast.					£. s. d.		
EXPENCES.							
Four ploughings,	-	-	-	-	0	4	0
Three harrowings,	-	-	-	-	0	0	6
Water-furrowing,	-	-	-	-	0	1	2
Seed,	-	-	-	-	0	10	0
Sowing,	-	-	-	-	0	0	6
Mowing,	-	-	-	-	0	1	0
Harvesting, &c.	-	-	-	-	0	1	2
Threshing,	-	-	-	-	0	3	0
					<hr/>		
					1	1	4
Rent, &c.	-	-	-	-	0	17	0
					<hr/>		
					1	18	4
PRODUCE.					£. s. d.		
Three quarters, at 20 s.	-	-	-	-	3	0	0
Expences,	-	-	-	-	1	18	4
					<hr/>		
Profit,	-	-	-	-	1	1	8
					<hr/>		
					£.	s.	d.
Ploughing,	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	0	0	6 $\frac{3}{4}$
Carting in harvest,	-	-	-	-	0	0	6 $\frac{1}{2}$
					<hr/>		
					0	5	1 $\frac{1}{4}$
					<hr/>		
Clear profit,	-	-	-	-	0	16	7 $\frac{3}{4}$

Drilled.

Drilled.

EXPENCES.

	£.	s.	d.
Four ploughings,	0	4	0
Three harrowings,	0	0	6
Water-furrowing,	0	1	8
Seed,	0	5	0
Drilling,	0	0	3
Four horse-hoeings,	0	2	8
Three hand-hoeings,	0	8	9
One hand-weeding,	0	2	0
Reaping,	0	3	9
Harvesting, &c.	0	1	0
Threshing,	0	2	0
	1	11	7
Rent, &c.	0	17	0
	2	8	7

PRODUCE.

Two quarters, at 20 s.	2	0	0
Loss,	0	8	7
	£.	s.	d.
Ploughing,	0	4	0
Harrowing,	0	0	6 $\frac{3}{4}$
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
	0	9	4 $\frac{1}{4}$
Total loss,	0	17	11 $\frac{1}{4}$
Profit by the broad-cast,	16	7 $\frac{3}{4}$	
Loss by the drilled,	0	17	11 $\frac{1}{4}$
Superiority of the former,	1	14	7

OBSERVATIONS.

The common husbandry maintains the superiority in this experiment, which has been so considerable in all the preceding ones. The drilled barley is, under every variation, a most unprofitable culture; and these trials, being absolutely comparative, are decisive with regard to the superiority of the common mode. This broad-cast crop is by no means a large one;

Profit brought over,

Ploughing,
Harrowing,
Carting in harvest,

Clear profit,

Drilled.

EXPENCES.

Three ploughings,
Harrowing,
Seed,
Drilling,
Four horse-hoeings,
Two hand-hoeings,
One weeding,
Reaping,
Harvesting, &c.
Threshing,

Rent, &c.

PRODUCE.

One quarter seventeen bushels, at 21s.

Loss,

Ploughing,
Harrowing,
Drilling,
Horse-hoeing,
Carting in harvest,

Total loss,

Profit by the broad-cast,
Loss by the drilled,

Superiority of the former,

£. s. d.
1 18

£. s. d.
0 3 0

0 0 6 1/4
0 0 6 1/2

0 4 1 1/4
1 13 11 1/4

£. s. d.

0 3 0
0 0 6
0 5 0
0 0 3
0 2 8
0 5 6
0 2 0
0 3 9
0 1 0
0 1 10

1 5 6
0 17 0
2 2 6

1 19 4 1/2
0 3 1 1/2

£. s. d.

0 3 0
0 0 6 3/4
0 0 3
0 4 0
0 0 6 1/2

0 8 4 1/4

0 11 5 3/4

1 13 11 3/4
0 11 5 3/4

2 5 5 1/2

OBSERVATIONS.

The superiority of the common mode of sowing in this trial is very great, and sufficiently decisive: from all the trials I have made on barley, with various designs, I am convinced that it is an improper grain to horse-hoe. If a man has an hundred acres ready for barley, of what great consequence is it, that he decide prudently on the method of sowing it! If he, in compliance with the unbounded assurances of some writers, drills and horse-hoe it, he is, according to this trial, 225 $\frac{1}{2}$ out of pocket—reckoning the profit he would have had if his land was sown broad-cast. In a word, the contrast is much the same as making a fortune by one method, and being ruined by the other.

EXPERIMENT N° 5.

Culture, expences, and produce, of twenty perches, field L*, 1766.

CULTURE.

I fixed upon this piece of land in spring 1765, with design to compare the two modes of sowing, in the perfection of tillage and manuring, to discover which would pay best a great expence in culture. It had been first ploughed in october, 1764, on to the ridge for winter. In march, 1765, it received the first spring ploughing: the third earth was given in april, when it was twice harrowed. The first week in may, manured it with two loads of a compost, consisting of equal parts of coal-ashes, mortar rubbish, hog-dung, &c. &c. all town manure. Ploughed it twice more the same month, and again in june. From thence to october, a ploughing every month, the last of which, the tenth, threw it on to the ridge, turning in two loads of rotten farm-yard dung. The beginning of march, 1766, ploughed it again, throwing half of it on to five-foot ridges, and half on to common three-foot ones; and soon after arched up the first by another earth, and harrowing it fine, drilled three rows of barley, one foot asunder, on the top of each, with half a peck of seed. At the same time, harrowed in a peck of seed on the other half: nothing could come up in a finer or more luxuriant manner. The last week in april, hand-hoed the rows of the drilled half, and horse-hoed them the beginning of may; which operation was repeated before the expiration of that month. In june, two more horse-hoeings were given, a hand-hoeing, and a weeding. The first week in july, another hand-weeding. Reaped it the middle of august. Product, one bushel and one peck. Mowed the broad-cast at the same time. The product, four bushels and half a peck.—The proportions *per acre* as follow:

Broad-

Broad-cast.

EXPENCES.

	£.	s.	d.
Twelve ploughings,	0	12	0
Harrowing,	0	0	6
Water-furrowing,	0	2	6
Seed,	0	12	0
Sowing,	0	0	3
First manuring,	2	16	8
Second ditto,	0	8	0
Mowing,	0	1	2
Harvesting,	0	1	3
Threshing,	0	8	3

Rent, &c.

5	2	7
1	14	0
6	16	7

PRODUCE.

	£.	s.	d.
Eight quarters and two bushels, at 25s.	10	6	3
Expences,	6	16	7
Profit,	3	9	8

	£.	s.	d.
Ploughing,	1	8	9
Harrowing,	0	1	1½
Manuring the first,	3	0	8
Second ditto,	0	10	0
Carting in harvest,	0	0	6½

The above profit,

5	1	1
3	9	8

Loss,

1	11	5
---	----	---

Drilled.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	12	0
Harrowing,	0	0	6
Water-furrowing,	0	3	0
Manuring,	3	4	8
Seed,	0	6	0
Drilling,	0	0	3½
Carried over,	4	6	5½

						£.	s.	d.
Brought over,	-	-	-	-	-	4	6	5½
Four horse-hoeings,	-	-	-	-	-	0	2	8
Two hand-hoeings,	-	-	-	-	-	0	6	3
Two weedings,	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	0	2	6
Harvesting, &c.	-	-	-	-	-	0	1	3
Threshing,	-	-	-	-	-	0	2	6
<hr/>								
Rent, &c.	-	-	-	-	-	5	3	7½
						1	14	0
<hr/>								
						6	17	7½

P R O D U C E.

Twenty bushels, at 25s.	-	-	-	-	-	3	2	6
Loss,	-	-	-	-	-	3	15	1½
<hr/>								
						£.	s.	d.
Ploughing,	-	-	-	-	-	1	8	9
Harrowing,	-	-	-	-	-	0	1	1½
Manuring,	-	-	-	-	-	3	10	8
Drilling,	-	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	-	0	4	0
Carting in harvest,	-	-	-	-	-	0	0	6½
<hr/>								
						5	5	4
Total loss,	-	-	-	-	-	9	0	5½
Ditto by the broad-cast,	-	-	-	-	-	1	11	5
<hr/>								
Latter superior by	-	-	-	-	-	7	9	0½

O B S E R V A T I O N S.

That both these crops are losing ones, I am not surprized; for the manuring is so expensive, that scarce any corn-crop can be supposed to answer it: but that circumstance is not of consequence to the design of this experiment. I wanted to know, which mode of culture would repay the expences soonest? which query is very completely answered. The broad-cast is so considerable a produce, that it may be pronounced in one light a most advantageous crop, since the loss upon it is so trifling, that the following one is under an absolute certainty (considering the prodigious heat the land is in) of paying that loss with abundant profit for several years to come. But on the contrary, the loss on the drilled part is so very great, that there is not the least prospect of ever repaying it with the fresh additional expences of culture;

culture; at least in that of barley; which we are considering at present. The value of this crop is but 3*l.* 2*s.* 6*d.* from the first vigour of the manure, and the loss above 9*l.*: how therefore is it possible that drilled barley should ever get up such a hill? There cannot be a shadow of doubt, that this piece of land, drilled for ever under barley, would continue unprofitable: and equal certainty is there, that the broad-cast half will, on the contrary, be extremely profitable. The comparison therefore is sufficiently decisive. But, to form the comparison only from these crops, what a vast difference is 740*l.* in the culture of 100 acres of barley! for such is the difference in one year between sowing and drilling.

EXPERIMENT N° 6.

Culture, expences, and produce, of fifty perches, field L*, 1766.

CULTURE.

In autumn 1765, ploughed a piece of horse-hoed potatoe-land on to the ridge for winter. March 20th, 1766, ploughed it flat. The 21st, harrowed it twice. April 18, ploughed it on to five parts each of ten perches, as follow, and harrowed them twice:

- N° 1. Flat; and drilled it in equally distant rows one foot asunder, with three gallons and one pint of feed.
2. Ditto; drilled it in equally distant rows two feet asunder, with one gallon, three quarts and one pint of feed.
3. Ridges three feet asunder: drilled one row on each; one gallon, two quarts and half a pint of feed.
4. Six-foot ridges, double rows, one foot asunder on each; one gallon, two quarts and half a pint of feed.
5. Flat; sowed broad-cast with three gallons three quarts of feed.

June 12th, hand-hoed N° 1, 2, 3, and 4. The 17th, horse-hoed N° 3 and 4. The 27th, hand-hoed N° 2 again. N° 1 was closed. Repeated the horse-hoeing of N° 3 and 4 the 28th. August 20th, cut them. The produce:

- N° 1. — 1 bushel 3 pecks and an half.
2. — Ditto.
3. — 3 pecks and three quarters.
4. — Ditto.
5. — 2 bushels 2 pecks.

Pro-

Proportions *per* acre as follow :

N° 1.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Four harrowings,	0	0	8
Water-furrowing,	0	1	0
Six bushels and one peck of feed,	0	18	9
Drilling,	0	0	6
Hand-hoeing once,	0	5	0
Mowing,	0	1	0
Harvesting,	0	2	0
Threshing,	0	5	0

Rent, &c.	1	16	11
	0	17	0

 2 13 11

PRODUCE.

	£.	s.	d.
Three quarters six bushels, at 24 s.	4	10	0
Expences,	2	13	11

Profit,	1	16	1
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	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	1	6
Drilling,	0	0	5
Carting in harvest,	0	0	6 $\frac{1}{2}$
	0	9	9 $\frac{3}{4}$

Clear profit,	1	6	3 $\frac{1}{4}$
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N° 2.

EXPENCES.

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	8
Water-furrowing,	0	1	0
Three bushels three pecks of feed,	0	11	3
Drilling,	0	0	4 $\frac{1}{2}$
Twice hand-hoeing,	0	8	0
Mowing,	0	1	0
Harvesting,	0	1	9
Threshing,	0	5	0

Carried over,	1	12	0 $\frac{1}{2}$
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Brought over,
Rent, &c.

£.	s.	d.
1	12	0½
0	17	0
<hr/>		
2	9	0½
<hr/>		

PRODUCE.

Three quarters one bushel, at 24s.

Expences,

Profit,

£.	s.	d.
4	10	0
2	9	0½
<hr/>		
2	0	11½
<hr/>		

Ploughing,

Harrowing,

Drilling,

Carting in harvest,

£. s. d.

0 7 2¼

0 1 6

0 0 3¾

0 0 6½

0 9 6½

Clear profit,

1 11 5

N° 3.

EXPENCES.

Ploughing,

Harrowing,

Three bushels and half a peck of seed,

Water-furrowing,

Drilling,

Hand-hoeing,

Two horse-hoeings,

Reaping,

Harvesting,

Threshing,

£. s. d.

0 3 0

0 0 8

0 9 4

0 1 0

0 0 6

0 5 0

0 2 0

0 2 0

0 1 6

0 2 6

Rent, &c.

1 7 6

0 17 0

2 4 6

PRODUCE.

One quarter seven bushels, at 24s.

Expences,

Profit,

£. s. d.

2 5 0

2 4 6

0 0 6

	£.	s.	d.	
Ploughing, - - - - -	0	7	2 $\frac{1}{4}$	
Harrowing, - - - - -	0	1	6	
Drilling, - - - - -	0	0	5	
Horse-hoeing, - - - - -	0	3	3	
Carting in harvest, - - - - -	0	0	6 $\frac{1}{2}$	
	<hr/>			0 12 10 $\frac{3}{4}$
The above profit, - - - - -	-	-	-	0 0 6 $\frac{1}{4}$
Loss, - - - - -	-	-	-	0 12 4 $\frac{1}{4}$

N° 4.

	£.	s.	d.	
Ploughing, - - - - -	0	3	0	
Harrowing, - - - - -	0	0	8	
Three bushels and half a peck of feed, - - - - -	0	9	4	
Drilling, - - - - -	0	0	3	
Water-furrowing, - - - - -	0	1	0	
Hand-hoeing, - - - - -	0	5	0	
Two horse-hoeings, - - - - -	0	1	0	
Reaping, - - - - -	0	2	6	
Harvesting, &c. - - - - -	0	1	6	
Threshing, - - - - -	0	2	6	
	<hr/>			1 6 9
Rent, &c. - - - - -	-	-	-	0 17 0
	<hr/>			2 3 9

PRODUCE.

One quarter seven bushels, at 24s. - - - - -	2	5	0
Expences, - - - - -	2	3	9
Profit, - - - - -	0	1	3

	£.	s.	d.	
Ploughing, - - - - -	0	7	2 $\frac{1}{4}$	
Harrowing, - - - - -	0	1	6	
Drilling, - - - - -	0	0	2 $\frac{1}{2}$	
Horse-hoeing, - - - - -	0	1	7 $\frac{1}{2}$	
Carting in harvest, - - - - -	0	0	6 $\frac{1}{2}$	
	<hr/>			0 11 0 $\frac{3}{4}$
The above profit, - - - - -	-	-	-	0 1 3
Loss, - - - - -	-	-	-	0 9 9 $\frac{3}{4}$

N. 5.

EXPENCES.

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	8
Water-furrowing,	0	1	0
Seven bushels two pecks of feed,	1	2	6
Sowing,	0	0	3
Mowing,	0	1	0
Harvesting,	0	2	6
Threshing,	0	6	8
	<hr/>		
Rent, &c.	1	17	7
	0	17	0
	<hr/>		
	2	14	7

PRODUCE.

	£.	s.	d.
Five quarters, at 24s.	6	0	0
Expences,	2	14	7
	<hr/>		
Profit,	3	5	5

	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	1	6
Carting in harvest,	0	0	6 $\frac{1}{2}$
	<hr/>		
	0	9	2 $\frac{1}{4}$
	<hr/>		
Clear profit,	2	16	2 $\frac{1}{4}$

COMPARISON.

	£.	s.	d.
Profit by the broad-cast,	2	16	2 $\frac{1}{4}$
Ditto by equally distant rows two feet,	1	11	5
	<hr/>		
The former superior by	1	4	9 $\frac{1}{4}$
	<hr/>		
Profit by the broad-cast,	2	16	2 $\frac{1}{4}$
By the equally distant rows one foot,	1	6	3 $\frac{1}{4}$
	<hr/>		
Former better by	1	9	11
	<hr/>		
Profit by the broad-cast,	2	16	2 $\frac{1}{4}$
Loss by double rows with five feet intervals,	0	9	9 $\frac{1}{4}$
	<hr/>		
Former better by	3	6	0

Profit by broad-cast,	-	-	-	2	16	2 $\frac{1}{4}$
Loss by equally distant three feet,	-	-	-	0	12	4 $\frac{1}{4}$
Former superior by	-	-	-	3	8	7 $\frac{1}{4}$
Profit by equally distant two feet,	-	-	-	1	11	5
Ditto by ditto one foot,	-	-	-	1	6	3 $\frac{1}{4}$
Former better by	-	-	-	0	5	1 $\frac{1}{4}$
Profit by equally distant two feet,	-	-	-	1	11	5
Loss by double rows, five feet intervals,	-	-	-	0	9	9 $\frac{1}{4}$
Superiority of the former,	-	-	-	2	1	2 $\frac{1}{4}$
Profit by equally distant two feet,	-	-	-	1	11	5
Loss by ditto three feet,	-	-	-	0	12	4 $\frac{1}{4}$
Superiority of the former,	-	-	-	2	3	9 $\frac{1}{4}$
Profit by equally distant one foot,	-	-	-	1	6	3 $\frac{1}{4}$
Loss by double rows, five feet intervals,	-	-	-	0	9	9 $\frac{1}{4}$
Superiority of the former,	-	-	-	1	16	1
Profit by equally distant one foot,	-	-	-	1	6	3 $\frac{1}{4}$
Loss by ditto three feet,	-	-	-	0	12	4 $\frac{1}{4}$
Former superior by	-	-	-	1	18	8
Loss by equally distant three feet,	-	-	-	0	12	4 $\frac{1}{4}$
Ditto by double rows, five feet intervals,	-	-	-	0	9	9 $\frac{1}{4}$
Latter better by	-	-	-	0	2	7

OBSERVATIONS.

This trial is, in many respects, extremely satisfactory. As we are not at present enquiring into the proper quantity of barley-feed, I shall here omit remarking the variations in quantity; only observing, that I scattered the seeds by no other rule than my eye---in quantity as pleased me best. The broad-cast mode is vastly superior to all the rest, and yielded a crop very uncommon upon such soils, in this season so remarkably wet. From hence we deduce, that the common management is superior to any of the other modes of sowing.

The next in order of profit is the two-feet equally distant drills: this surprises me very much; I had no conception that they would exceed the

one-foot rows, which I have found so much superior in many trials. The double rows with five feet intervals, and the equally distant three feet, are both losing crops, and nearly in the same degree; which is precisely what one would suppose; for they both occupy the same space of ground: but the superiority, though small, is with the double rows, and this is probably owing to the corn being better supported, and less liable to damage by horse-hoeing, than single ones.---The want of more horse-hoeings does not appear in the product of these pieces, compared to preceding trials.

EXPERIMENT N° 7.

Culture, expences, and produce, of twenty perches, field M*, 1766.

CULTURE.

This piece yielded potatoes in 1765, which were taken up in october, and the land ploughed on to the ridge for winter. The beginning of march the weather was so remarkably fine, that I gave it two more earths by the 12th, and sowed it. One half was, by the last ploughing, thrown on to five feet ridges, and the other half left flat. Drilled the first with three rows of barley one foot asunder, using half a peck of seed; and sowed the other broad-cast with a peck. May 17th, hand-hoed the rows. So much wet weather came during the latter part of the month, that I was unable to do any thing more to them. In june, horse-hoed them thrice, hand-hoed them twice, and weeded them once. July 11th, gave the last horse-hoeing, and soon after hand-weeded them again. Cut them both the 20th of august.

Product of the broad-cast, one bushel and half a peck. Of the drilled, two pecks and three quarters.

	Broad-cast.						£.	s.	d.
	EXPENCES.								
Three ploughings,	-	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	-	0	0	4
Seed,	-	-	-	-	-	-	0	10	0
Sowing,	-	-	-	-	-	-	0	0	3
Mowing,	-	-	-	-	-	-	0	1	0
Harvesting, &c.	-	-	-	-	-	-	0	2	0
Threshing,	-	-	-	-	-	-	0	3	0
							0	19	7
Rent, &c.	-	-	-	-	-	-	0	17	0
							1	16	7

PRODUCE.				£.	s.	d.
Two quarters two bushels, at 24s.	-	-	-	2	14	0
Expences,	-	-	-	1	16	7
Profit,	-	-	-	0	17	5

				£.	s.	d.
Ploughing,	-	-	-	0	7	2½
Harrowing,	-	-	-	0	0	9
Carting in harvest,	-	-	-	0	0	6½
				0	8	5½
Clear profit,	-	-	-	0	8	9½

Drilled.
EXPENCES.

				£.	s.	d.
Three ploughings,	-	-	-	0	3	0
Harrowing,	-	-	-	0	0	4
Seed,	-	-	-	0	5	0
Drilling,	-	-	-	0	0	3½
Four horse-hoeings,	-	-	-	0	2	8
Two hand-hoeings,	-	-	-	0	7	0
Two weedings,	-	-	-	0	2	9
Reaping,	-	-	-	0	2	9
Harvesting, &c.	-	-	-	0	2	3
Threshing,	-	-	-	0	1	10

Rent, &c.	-	-	-	1	7	10½
				0	17	0
				2	4	10½

PRODUCE.

Eleven bushels, at 24s.	-	-	-	1	13	0
Loss,	-	-	-	0	11	10½

				£.	s.	d.
Ploughing,	-	-	-	0	7	2½
Harrowing,	-	-	-	0	0	9
Drilling,	-	-	-	0	0	3
Horse-hoeing,	-	-	-	0	4	0
Carting in harvest,	-	-	-	0	0	6½
				0	15	4½

Total loss,	-	-	-	1	4	7½
Profit by the broad-ca6,	-	-	-	0	8	9½
Latter superior by	-	-	-	1	13	4½

OBSERVATIONS.

The common husbandry hitherto maintains its superiority in the culture of barley; in which it appears, from all these experiments, to be unrivalled by the new method. I should observe, that I have never found one exception to the great inconveniencies that attend the horse-hoeing of this grain, viz. those of the stalks, through their natural weakness, breaking, bending, and falling into the intervals.

EXPERIMENT N° 8.

Culture, expences, and produce, of twenty perches, field L*, 1767..

CULTURE.

This piece produced turneps in the common method in the year 1766, which were drawn for cattle in december. The second week in march ploughed it twice, the last of which threw half of it on to five feet ridges, and the other half on to common three feet ones. The first week in april arched up the former, and drilled them, each with three rows one foot asunder, using half a peck of seed, and ploughed and sowed the others with a peck. The extreme wetness of the following season not only made the weeds grow in an uncommon manner, but also rendered it very difficult to give the operations of horse-hoeing, &c. at the proper times. In june, I horse-hoed the rows thrice, hand-hoed them twice, and weeded them once. The first week in july, horse-hoed them again; and soon after, both hand-hoed and weeded again: the broad-cast was also once thiftled. Cut them the latter-end of august. The produce of the broad-cast, one bushel and quarter of a peck. Of the drilled, two pecks and one quarter.

Broad-cast.

EXPENCES.

						£.	s.	d.
Two ploughings,	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	0	0	4
Water-furrowing,	-	-	-	-	-	0	1	0
Seed,	-	-	-	-	-	0	12	6
Sowing,	-	-	-	-	-	0	0	6
Thiftling,	-	-	-	-	-	0	1	9
Mowing,	-	-	-	-	-	0	1	2
Harvesting,	-	-	-	-	-	0	2	6
Threshing,	-	-	-	-	-	0	3	0

Rent, &c,	-	-	-	-	-	1	5	9
						0	17	0
						2	2	9

PRO-

PRODUCE.

	£.	s.	d.
Seventeen bushels, at 23s.	2	8	10½
Expences,	2	2	9
Profit,	0	6	1½
<hr/>			
	£.	s.	d.
Ploughing,	0	7	3¼
Harrowing,	0	0	9
Carting in harvest,	0	0	6½
	<hr/>		
The above profit,	0	8	7¼
	0	6	1½
Loss,	0	2	5¼

Drilled.

EXPENCES.

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	4
Water-furrowing,	0	1	6
Seed,	0	6	3
Drilling,	0	0	3½
Four horse-hoeings,	0	2	8
Three hand-hoeings,	0	10	0
Two hand-weedings,	0	3	6
Reaping,	0	2	6
Harvesting, &c.	0	2	3
Threshing,	0	1	8
	<hr/>		
	1	13	11½
Rent, &c.	0	17	0
	<hr/>		
	2	10	11½

PRODUCE.

Nine bushels, at 23s.	1	5	10½
Loss,	1	5	1
	<hr/>		
	£.	s.	d.
Ploughing,	0	7	3¼
Harrowing,	0	0	9
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6½
	<hr/>		
	0	12	10¼
Total loss,	1	17	11¾
Ditto by the broad-cast,	0	2	5¾
	<hr/>		
Latter superior by	1	15	5½

OBSERVATIONS.

The comparison in the year 1767 was attended with pretty much the same effect as in 1766. I found in this trial the same disagreeable circumstances relative to the weakness of the straw in horse-hoeing; and another point, which is worthy of observation, is the aptitude of horse-hoed barley to attract the mildew, either from a superior succulency in the stalk and leaf, or from the position of the rows admitting so free a current of air. This horse-hoed crop was much mildewed; the broad-cast was a little, but not near so much as the drilled. It is observable, that the drilled crops continue as inferior as ever.

EXPERIMENT N° 9.

Culture, expences, and produce, of twenty perches, field M*, 1767.

CULTURE.

These perches were cropped with potatoes in 1766, which were taken up in october, and the land ploughed on to the ridge. The beginning of march, stirred it again, and gave it a third earth, throwing half on to five flats, and half flat, the 17th; purposed sowing it the 18th, but was prevented by rain. The first week in april, ploughed again, arching up the five feet ridges, and ploughing the other half flat. Drilled the first with three rows one foot asunder, with half a peck of seed, and harrowed in a peck upon the other half. The extreme wetness of the following season threw the ploughs often out of their work; consequently the business of horse and hand-hoeing could only be done at such opportunities as the season allowed. I gave this drilled piece four horse-hoeings, two hand-hoeings, and two weedings: cut them the end of august. The product, of the broadcast, one bushel and a peck; of the drilled, two pecks and three fourths.

Broad-cast.

EXPENCES.

[illegible]

PRODUCE.

	£.	s.	d.
Two quarters four bushels, at 23 s.	2	17	6
Expences,	2	1	9
Profit,	0	15	9

	£.	s.	d.
Ploughing,	0	9	9
Harrowing,	0	1	1½
Carting in harvest,	0	0	6½
	0	11	5

Clear profit,	0	4	4
---------------	---	---	---

Drilled.

EXPENCES.

	£.	s.	d.
Four ploughings,	0	4	0
Harrowing,	0	0	6
Seed,	0	6	3
Drilling,	0	0	3½
Four horse-hoeings,	0	2	8
Two hand-hoeings,	0	7	6
Two weedings,	0	3	0
Reaping,	0	3	0
Harvesting, &c.	0	1	6
Threshing,	0	2	0

Rent, &c.	1	10	8½
	0	17	0
	2	7	8½

PRODUCE.

Eleven bushels, at 23 s.	1	11	7½
Loss,	0	16	1

	£.	s.	d.
Ploughing,	0	9	9
Harrowing,	0	1	1½
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6½

	0	15	8
Total loss,	1	11	9

					£.	s.	d.
Loss, brought over,	-	-	-	-	1	11	9
Profit by the broad-cast,	-	-	-	-	0	4	4
Latter superior by	-	-	-	-	1	16	1

OBSERVATIONS.

This superiority of the broad-cast is very decisive; for the crop is but a middling one in general, though good for this season. It would be endless to repeat to every experiment, that I constantly find the horse-hoeing very pernicious to the barley, from the weakness of the stalks. I have not experienced one exception to this remark.

EXPERIMENT N° 10.

Culture, expences, and produce, of thirty perches, field M*, 1767.

CULTURE.

This piece yielded broad-cast turneps in the utmost perfection of tillage and manuring in 1766, which were drawn for cattle in december and january. The first fortnight in march, I gave it two earths, the last of which threw it into three parts, one on to ridges five feet broad, and two flat. The beginning of april, stirred it again, arching up the ridges, and ploughing the other parts flat again. Drilled the former with four rows eight inches asunder on the top of each, using half a peck of seed; one of the flat pieces drilled in equally distant rows one foot asunder with half a peck, and harrowed in a peck on the other broad cast. The requisite attention to these crops was given in every particular; but the season was so wet, that all the operations of cleaning, &c. could not be performed exactly at the times I wished. The drilled part on ridges was horse-hoed four times, hand-hoed twice, and weeded twice. The equally distant rows were hand-hoed twice and weeded twice, and the broad-cast was once thiftled. They were cut the end of august. The produce,

- N° 1, Horse-hoed, three pecks and a half.
 2, Equally distant, two bushels, two pecks and a half.
 3, Broad-cast, two bushels, three pecks and a half.

N^o 1.

EXPENCES.

								£.	s.	d.
Three ploughings,	-	-	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	-	-	0	0	4
Seed,	-	-	-	-	-	-	-	0	6	3
Drilling,	-	-	-	-	-	-	-	0	0	3½
Four horse-hoeings,	-	-	-	-	-	-	-	0	2	8
Two hand-hoeings,	-	-	-	-	-	-	-	0	10	8
Two weedings,	-	-	-	-	-	-	-	0	4	6
Reaping,	-	-	-	-	-	-	-	0	3	6
Harvesting,	-	-	-	-	-	-	-	0	1	9
Threshing,	-	-	-	-	-	-	-	0	2	4
								<hr/>		
Rent,	-	-	-	-	-	-	-	1	15	3½
								0	17	0
								<hr/>		
								2	12	3½

PRODUCE.

Fourteen bushels, at 25 s.	-	-	-	-	-	-	-	2	3	9
Loss,	-	-	-	-	-	-	-	0	8	6½
								<hr/>		
Ploughing,	-	-	-	-	-	-	-	0	7	3½
Harrowing,	-	-	-	-	-	-	-	0	0	9
Drilling,	-	-	-	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	-	-	-	0	4	0
Carting in harvest,	-	-	-	-	-	-	-	0	0	6½
								<hr/>		
								0	12	10½
								<hr/>		
Total loss,	-	-	-	-	-	-	-	1	1	4½
								<hr/>		

N° 1.

EXPENCES.

						£.	s.	d.
Three ploughings,	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	0	0	4
Seed,	-	-	-	-	-	0	6	3
Drilling,	-	-	-	-	-	0	0	6
Two hand-hoeings,	-	-	-	-	-	0	12	9
Two weedings,	-	-	-	-	-	0	4	6
Mowing,	-	-	-	-	-	0	1	0
Harvesting, &c.	-	-	-	-	-	0	2	6
Threshing,	-	-	-	-	-	0	7	0
						<hr/>		
						1	17	10
Rent, &c.	-	-	-	-	-	0	17	0
						<hr/>		
						2	14	10
						<hr/>		

PRODUCE.

						£.	s.	d.
Five quarters two bushels, at 25 s.	-	-	-	-	-	6	11	3
Expences,	-	-	-	-	-	2	14	10
						<hr/>		
Profit,	-	-	-	-	-	3	16	5

£. s. d.

Ploughing,	-	-	-	-	0	7	3 $\frac{3}{4}$
Harrowing,	-	-	-	-	0	0	9
Drilling,	-	-	-	-	0	0	5
Carting in harvest,	-	-	-	-	0	0	6 $\frac{1}{2}$
					<hr/>		
					0	9	0 $\frac{1}{4}$
					<hr/>		
Clear profit,	-	-	-	-	3	7	4 $\frac{3}{4}$
					<hr/>		

N° 3.

EXPENCES.

Three ploughings,	£. s. d.
Harrowing,	0 3 0
Seed,	0 10 6
Sowing,	0 12 6
Thistling,	0 0 3
Mowing,	0 1 0
Harvesting,	0 2 6
Threshing,	0 7 9

Rent, &c.

£. s. d.

1 8 6

0 17 0

PRODUCE.

£. s. d.

Five quarters six bushels, at 25 s.

7 3 9

Expences,

2 5 6

Profit,

4 18 3

Ploughing,

£. s. d.

0 7 3½

Harrowing,

0 1 1½

Carting in harvest,

0 0 6½

0 8 11½

Clear profit,

4 9 3½

COMPARISON.

£. s. d.

Profit by broad-cast,

4 9 3½

Ditto by equally distant rows,

3 7 4½

Superiority of the former,

1 1 10½

Profit

£. s. d.

Profit by broad-cast,

4 9 3½

Loss by horse-hoed,

1 1 4½

Superiority of the former,

5 10 8

Profit by equally distant rows,

3 7 4½

Loss by horse-hoed,

1 1 4½

Superiority of the former,

4 8 9½

OBSERVATIONS.

There is one circumstance in the result of this experiment, which surprises me very much; it is the superiority of the broad-cast to the equally distant rows one foot asunder. In a *course* at large, I am sensible, by means of clover, that it would almost always turn out thus; but in a single crop I apprehended equally distant rows, that were not far asunder, would have the advantage. In them there is no mischief from horse-hoeing; and the hand-hoeing not only loosens the surface for the roots to strike into, and cleans it, but it is performed before the barley joins, or bends into the intervals; consequently the benefit is reaped without any attendant injury. This cannot be effected in horse-hoeing, because you must begin that operation so early, that the plants would be quite buried. I apprehended, from these circumstances, that the equally distant rows would very often be superior to the broad-cast; however, the event is otherwise: the common mode much exceeds it, which, probably, is at least partly owing to the equal distances of the broad-cast plants, which are, consequently, in the most advantageous position for drawing the nourishment from land so well manured as this. The comparison of these two modes is decisive; for, in the drilling, the expences run higher by nine shillings an acre, and yet the profit is less by more than a guinea. As to the horse-hoed part, the difference between that and both the others is very great; sufficient, I should suppose, to keep any person from venturing largely in the horse-hoeing culture of barley.

GENERAL

GENERAL OBSERVATIONS on this Comparison.

The first remark I shall make on the experiments which form this parallel is, that an absolute exactness must not be expected: they are deficient in one particular, but not of consequence in reversing any of the preceding circumstances. The different value of the chaff and straw of each crop is not minuted: this point is of some importance; but I found it, in the course of a variety of experiments, and the business of a large farm, impossible to attend to. Had I been perfectly minute in all such points, I should, instead of spending hundreds on trials of this sort, have been out of pocket thousands. I have often said, and must again repeat it, that a complete course of experiments on numerous points in agriculture is a business that requires a large fortune.

The difference of the chaff and straw must be very greatly in favour of the broad-cast crops. This fact, I apprehend, the most zealous advocates for drilling will never dispute; and the amount of the difference in quantity is very considerable; but, as I made no experiments with immediate design to ascertain the point exactly, I shall forbear naming any particular quantity. Near cities, or great towns, where straw sells so well as to answer to *good farmers* to sell it with a view to purchase manures, the object must be very important. However, be the amount much or little, as the balance lies on the same side with all the advantages of the preceding experiments, it only renders the conclusions deduced from them the more decisive, and proves, that the common broad-cast mode of sowing is incomparably better, and in every respect more advantageous, than the new method; and this truth will appear very clearly, by drawing the particulars of these experiments into single points of view.

Another circumstance in which the broad-cast method had the disadvantage, in the preceding trials, was the time of sowing. I scrupulously adhered to the maxim of sowing and drilling on the same day, which in some respects is a false practice: for instance, the seed may often be ploughed in at the second earth, by which means much time is saved, a point in spring sowing of vast importance, and in some seasons sufficient to balance almost every other; but the second earth is not sufficient to prepare the ridges for drilling, especially in moist soils; they must have a third to arch them up, and then, for the drill to work well, the soil ought to be absolute dust in dryness, which, in some springs, it is not till the end of May: therefore, in a comparison of the two methods, the time of sowing might safely be various, as well as the ploughings dependant on it. In experiment N^o 10 of this comparison, I well remember, this was the case; but both methods were executed at the same time. This circumstance, throughout these trials, is of importance, and, like the article chaff and straw, *against* the broad-cast; consequently the superiority of that method is so far confirmed, if not increased. I shall now draw the totals into one view.

EXPENCES.

EXPENCES.

	Broad-cast.			Drilled.		
	£.	s.	d.	£.	s.	d.
N ^o 1,	4	0	11½	4	10	10½
2,	3	15	5½	4	2	5½
3,	2	3	5½	2	17	11½
4,	2	1	0½	2	10	10½
5,	11	17	8	12	2	11½
6,—(1)				3	3	8½
—(2)				2	18	7
—(3)				2	17	4½
—(4)				2	14	9½
—(5)	3	3	9½			
7,	2	5	0½	2	17	7½
8,	2	11	4½	3	3	9½
9,	2	13	2	3	3	4½
10,—(1)				3	5	11½
—(2)				3	3	10½
—(3)	2	14	5½			
Average,	3	14	7½	3	15	2½
N ^o 5, manured,						
deducted, it is,	2	16	6	3	2	4

We find, from this comparison, that the new husbandry is more expensive than the old, notwithstanding the difference of seed; but the difference is not considerable enough to found any decisive conclusions on.

PRODUCE.

	Broad-cast.			Drilled.		
	Q.	B.	P.	Q.	B.	P.
N ^o 1,	3	1	0	1	7	0
2,	4	0	0	2	0	0
3,	3	0	0	2	0	0
4,	3	6	0	1	7	0
5,	8	2	0	2	4	0
6,—(1)				3	6	0
—(2)				3	6	0
—(3)				1	7	0
—(4)				1	7	0
—(5)	5	0	0			

N^o 7.

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EXPENCES.

EXPENCES.

	Broad-cast.			Drilled.		
	£.	s.	d.	£.	s.	d.
N ^o 1,	4	0	11½	4	10	10½
2,	3	15	5½	4	2	5½
3,	2	3	5½	2	17	11½
4,	2	1	0½	2	10	10½
5,	11	17	8	12	2	11½
6,—(1)				3	3	8½
—(2)				2	18	7
—(3)				2	17	4½
—(4)				2	14	9½
—(5)	3	3	9½			
7,	2	5	0½	2	17	7½
8,	2	11	4½	3	3	9½
9,	2	13	2	3	3	4½
10,—(1)				3	5	11½
—(2)				3	3	10½
—(3)	2	14	5½			
Average,	3	14	7½	3	15	2½
N ^o 5, manured,	2	16	6	3	2	4
deducted, it is,						

We find, from this comparison, that the new husbandry is more expensive than the old, notwithstanding the difference of seed; but the difference is not considerable enough to found any decisive conclusions on.

PRODUCE.

	Broad-cast.			Drilled.		
	Q.	B.	P.	Q.	B.	P.
N ^o 1,	3	1	0	1	7	0
2,	4	0	0	2	0	0
3,	3	0	0	2	0	0
4,	3	6	0	1	7	0
5,	8	2	0	2	4	0
6,—(1)				3	6	0
—(2)				3	6	0
—(3)				1	7	0
—(4)				3	7	0
—(5)	5	0	0			

N^o 7.

PRODUCE.

	Broad-cast.				Drilled.		
	Q.	B.	P.		Q.	B.	P.
N ^o 7,	2	2	0		1	3	0
8,	2	1	0		1	1	0
9,	2	4	0		1	3	0
10,—(1)					1	6	0
—(2)					5	2	0
—(3)—	5	6	0				
Average,	3	7	3		2	2	2

Equally distant rows, hand-hoed.

	Q.	B.	P.
N ^o 6,—(1)	3	6	0
(2)	3	6	0
10,—(2)	5	2	0
Average,	4	2	0

These deducted from the total drilled, leave the crops that
were horse-hoed, the average of which is,

	Q.	B.	P.
	1	6	1
Average product, broad-cast,	3	7	3
Ditto horse-hoed,	1	6	1
Superiority of the former,	2	1	2

The general comparison between the broad-cast and hand-hoed is not good, because the former, in each of the three experiments, is superior, and the latter is manured more. It stands, therefore, thus:

	Q.	B.	P.
Average broad-cast, which answers those three trials,	5	3	0
Average hand-hoed,	4	2	0
Superiority of the former,	1	1	0

It

It appears from these tables, that the common husbandry infinitely exceeds the horse-hoeing culture in product, and is even superior to drilling in equally distant rows for hand-hoeing. The former truth is what I should naturally have conceived; but the latter is something contrary to the opinion I had before embraced.

PROFIT and LOSS,

Broad-cast.

	Profit.				Loss.		
	£.	s.	d.		£.	s.	d.
N ^o 1,					0	18	5 $\frac{1}{4}$
2,	0	3	6 $\frac{1}{4}$				
3,	0	16	7 $\frac{1}{4}$				
4,	1	13	11 $\frac{1}{4}$				
5,					1	11	5
6,—(5)—	2	16	2 $\frac{1}{4}$				
7,	0	8	9 $\frac{1}{4}$				
8,					0	2	5 $\frac{1}{4}$
9,	0	4	4				
10,—(3)—	4	9	3 $\frac{1}{4}$				
	10	12	9 $\frac{1}{2}$		2	12	4
	2	12	4				
Profit on ten acres,	8	0	5 $\frac{1}{2}$				
Average per acre,	0	16	0 $\frac{1}{2}$				

Drilled.

	Profit.				Loss.		
	£.	s.	d.		£.	s.	d.
N ^o 1,					2	13	4 $\frac{1}{4}$
2,					2	2	5 $\frac{1}{4}$
3,					0	17	11 $\frac{1}{4}$
4,					0	11	5 $\frac{1}{4}$
5,					9	0	5 $\frac{1}{4}$
6,—(1)—	1	6	3 $\frac{1}{4}$				
—(2)—	1	11	5		0	12	4 $\frac{1}{4}$
—(3)					0	9	9 $\frac{1}{4}$
—(4)							
Carried over,	2	17	8 $\frac{1}{4}$		16	7	11
Vol. I.			[N n n]				

	Profit.	Loss.
£. s. d.	£. s. d.	£. s. d.
Brought over,	2 17 8½	16 7 11
Nº 7,		1 4 7½
8,		1 17 11½
9,		1 11 9
10, — (1)		1 1 4½
— (2) —	3 7 4½	
	<hr/> 6 5 1 <hr/>	<hr/> 22 3 7½ <hr/>
Loss on fourteen acres,		<hr/> 6 5 1 <hr/>
Average <i>per</i> acre, 1 l. 2 s. 9 d.		<hr/> 15 18 6½ <hr/>
Average profit by the broad-cast,		0 16 0½
Ditto loss by the drilled,		1 2 9
Superiority of the former,		<hr/> 1 18 9½ <hr/>

Nothing can be more decisive than this comparison; for the difference between the modes is so great, that a man, upon this kind of soil, must be infatuated, to extend the drill culture of barley to a whole, or even a considerable part of a farm. What, therefore, would be the result, if, by some strange unforeseen events, it was extended to the whole kingdom? Certainly the most pernicious consequences. Instead of the vast aggregate profit which arises from barley, the annual loss of many millions would ensue.

It is observable, that the only three profitable crops in the drill account are equally distant without horse-hoeing; those deducted, the average is of horse-hoed crops, and amounts to 1 l. 8 s. 11 d. and all that were horse-hoed proving so extremely disadvantageous, sufficiently evince the absurdity of the practice *on these soils*.

I should here repeat, what I remarked in treating of wheat, that this is not a comparison of the two methods in general, but only in the culture of
barley,

barley. I shall hereafter insert a general comparison, in which the new husbandry will not appear to such disadvantage.

There is no drawing a general proportion between the two methods in this culture; for the one being profitable, and the other the contrary, the more you have of the one, the better; and the less of the other: so that one acre broad-cast is infinitely preferable to ten millions drilled.

Nothing can be more decisive than the comparison for the difference between the mode is so great, that a man, upon this kind of soil, must be instructed, to extend the drill culture of barley to a whole, or even a considerable part of a farm. What, therefore, would be the result, if, by some strange unforeseen event, it was extended to the whole kingdom? Certainly the most pernicious consequences. Instead of the vast aggregate profit which arises from barley, the annual loss of many millions would ensue.

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SECTION.

I should here repeat, what I remarked in treating of wheat, that this is a comparison of the two methods in general, but only in the culture of barley.

Chapter II
H. A. R. L. V.
1830
I shall hereafter insert a general comparison, in which the new
husbandry will not appear to such disadvantage.

There is no drawing a general proportion between the two husbandries
as culture for the one being profitable, and the other the contrary, the
one being of one kind, the better, and the other of another kind, and
the one call is infinitely preferable to ten millions drilled.

It is not any enquiry in husbandry more important than that of
the quantity of seed most proper to be sown of different grain; and
I believe that the best husbandry is the best husbandry.

There have been chiefly executed by
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There is no enquiry in husbandry more important than that of
the quantity of seed most proper to be sown of different grain; and
I believe that the best husbandry is the best husbandry.

There have been chiefly executed by
the British husbandry, now
with the merit of that mode
of husbandry, is the

S E C T. IV.

Of the QUANTITY of SEED.



THERE is not any enquiry in husbandry more important than that of the quantity of seed most proper to be used of different grain : and no point on which we find fewer decisive experiments. Respecting seed, I am somewhat apprehensive that the few experiments extant on the subject are not altogether void of prejudice : they have been chiefly executed by writers who have been passionate admirers of the drill husbandry : now the quantity of seed is particularly connected with the merit of that mode of sowing, as one of the chief advantages given it by its authors, is the saving of seed ; which they reckon more than to balance the extra expences : consequently, the less seed necessary for an acre of land, the more beneficial that husbandry : their reasoning indeed could not but prove in a good measure for small quantities in the old husbandry also, but the less in that, the less also in drilling ; and they well knew that the broadcast could never possibly rival them in smallness of quantity. Thus an object not apparently dependant on either the old or new method, has been made a party concerned, and consequently suffered as great misrepresentations as the modes themselves. It is for these reasons that we should be cautious of giving implicit credit to partial experiments made by men who were bent upon erecting a system : when once a splendid hypothesis dazzles the imagination, the judgment is affected too : it is something of a misfortune when, in the trial of numerous experiments, many tend to some certain important points : the eagerness of making new discoveries will, in such a situation, probably have an ill effect on the mind, in giving it a peculiar attachment that may warp the judgment in executing and registering experiments—and occasion a neglect of other matters equally useful. In the range of experimental philosophy, nothing is so mischievous as the vanity of founding systems.

P A R T I.

EXPERIMENT N° I.

2. Produce,

Chap. I.

B A R L E Y.

							2.	B.	P.
2. Produce,	-	-	-	-	-	-	1	6	1
Seed,	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	1	4	1
3. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	2	1	0
4. Produce,	-	-	-	-	-	-	3	0	1
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	2	4	1

OBSERVATIONS.

This trial I apprehend is very decisive: the regular rise of product with seed shews clearly that four bushels are a far preferable quantity to any of the other portions.

EXPERIMENT N° 2.

Marked five pieces of fallow land in field T, each of 20 perches, and sowed them in April as follows,

- N° 1. With $\frac{1}{2}$ a peck.
2. With $\frac{3}{4}$ of ditto.
3. With 1 peck.
4. With 1 $\frac{1}{4}$ ditto.
5. With 1 $\frac{1}{2}$ ditto.

Every article of culture the same: The produce:

- N° 1. One bushel.
2. Seven pecks.
3. Two bushels and 1 peck.
4. Ditto.
5. Three bushels and $\frac{1}{2}$ peck.

The proportions per acre are as follow,

							2.	B.	P.
N° 1. Produce,	-	-	-	-	-	-	1	0	0
Seed,	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	0	7	0

2. Produce,	-	-	-	-	-	-	-	1	6	0
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	1	3	2
3. Produce,	-	-	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	2	0	0
4. Produce,	-	-	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	1	7	2
5. Produce,	-	-	-	-	-	-	-	3	0	2
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	2	5	2

OBSERVATIONS.

The difference between N° 3 and 4 is a break in the regularity of the proportioned increase; and contrary to the general result of the experiment. Such apparent contradictions will often be met with in the most accurate trials; and they certainly are owing to hidden causes—perhaps to variations of soil not discoverable. But the general tenor of the result is very clear and decisive in favour of the largest quantity of seed, for the product is much superior to those of the smaller quantities.

EXPERIMENT N° 3.

Marked in the same field, 6 pieces of fallow, and sowed them at the same time as follow, each containing 10 perches.

N° 1. With $\frac{1}{4}$ of a peck.

2. With $\frac{1}{2}$ ditto.

3. With $\frac{3}{4}$ ditto.

4. With 1 ditto.

5. With 1 peck.

6. With 1 $\frac{1}{2}$ ditto.

The culture and management were in every respect similar: the produce as follows,

N° 1.

N ^o .	1.	2.	3.	4.	5.	6.	Q.	B.	P.
	0	0	0	0	0	0	0	0	2
	0	0	0	0	0	0	0	0	3
	0	0	0	0	0	0	0	0	3
	0	0	0	0	0	0	0	0	3
	0	0	0	0	0	0	0	0	2
	0	0	0	0	0	0	0	0	3

The proportions per acre are as follow,

N ^o 1. Produce,	0	0	0
Seed,	0	0	0
Clear produce,	0	7	0
2. Produce,	0	6	0
Seed,	0	0	1
Clear produce,	1	4	2
3. Produce,	0	6	0
Seed,	0	0	2
Clear produce,	1	4	0
4. Produce,	0	7	0
Seed,	0	0	3
Clear produce,	1	4	0
5. Produce,	3	0	0
Seed,	0	4	0
Clear produce,	2	4	0
6. Produce,	3	4	0
Seed,	0	5	0
Clear produce,	2	7	0

OBSERVATIONS.

This experiment is in some respects very decisive, and in others equally unsatisfactory: the great superiority of N^o 5 and 6 shew plainly that the large quantities of seed are far preferable to the smaller: and five bushels exceeding four proves so far, that the latter quantity is not sufficient. This circumstance is of particular importance, as it shews that 4 bushels, the

EXPERIMENT N° 4.

N^o 1. With $\frac{1}{2}$ a peck.

2. With 1 peck.
3. With 1 $\frac{1}{2}$ ditto.
4. With 2 ditto.
5. With 2 $\frac{1}{2}$ ditto.
6. With 3 ditto.

The culture in all respects the same: the produce as follows,

N ^o .	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	2.	B.	P.
1.	-	-	-	-	-	-	-	-	-	-	0	1	0
2.	-	-	-	-	-	-	-	-	-	-	0	1	3
3.	-	-	-	-	-	-	-	-	-	-	0	2	0
4.	-	-	-	-	-	-	-	-	-	-	0	2	0
5.	-	-	-	-	-	-	-	-	-	-	0	1	3
6.	-	-	-	-	-	-	-	-	-	-	0	1	3

The proportions of feed and produce per acre as follow,

Nº I.	Produce,	-	-	-	-	-	-	2	0	0
	Seed,	-	-	-	-	-	-	0	2	0

Clear produce,	-	-	-	-	-	1	6	0
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2. Produce,	-	-	-	-	-	-	3	4	0
Seed,	-	-	-	-	-	-	0	4	0

Clear produce,	3	0	0
3. Produce,			

										2	B	P.
3. Produce,	-	-	-	-	-	-	-	-	-	4	0	0
Seed,	-	-	-	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	-	-	-	3	2	0
4. Produce,	-	-	-	-	-	-	-	-	-	4	0	0
Seed,	-	-	-	-	-	-	-	-	-	1	0	0
Clear Produce,	-	-	-	-	-	-	-	-	-	3	0	0
5. Produce,	-	-	-	-	-	-	-	-	-	3	4	0
Seed,	-	-	-	-	-	-	-	-	-	1	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	2	0
6. Produce,	-	-	-	-	-	-	-	-	-	3	4	0
Seed,	-	-	-	-	-	-	-	-	-	1	4	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	0

OBSERVATIONS.

The knowledge we gain from this experiment is by no means to be flighted. It appears very plainly, that six bushels are the quantity most beneficial of the specified: for all that are above it, are much inferior in produce, and also all below it. We are not absolutely to conclude from hence, that this exact quantity exceeds any other. Such a determination would be much too hasty: all we can decide from it is, that there exists a probability of six bushels being better than four. It rests upon a variety of trials absolutely to decide the point. A circumstance not to be forgotten is, the preparation for the crops: it was by mere fallowing; the land had not been manured of many years. We shall discover, by trials made for that purpose, what difference is caused by the soil being in great or in poor heart.

EXPERIMENT N° 5.

Marked in the same field, and at the same time as N° 4, five pieces, each of ten perches, and sowed them in the following manner:

- N° 1. With $\frac{1}{2}$ a peck.
 2. With $\frac{3}{4}$ of ditto.
 3. With 1 ditto.
 4. With $1\frac{1}{4}$ ditto.
 5. With $1\frac{1}{2}$ ditto.

The

The culture, and every article of management, the same in all respects; and the produce as follows:

N ^o	1.	2.	3.	4.	5.	2.	B.	P.
1.	-	-	-	-	-	0	0	3½
2.	-	-	-	-	-	0	1	2
3.	-	-	-	-	-	0	1	3½
4.	-	-	-	-	-	0	2	0
5.	-	-	-	-	-	0	1	3½

The proportions *per* acre are as follow:

N ^o 1. Produce,	-	-	-	-	-	1	6	0
Seed,	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	1	4	0
2. Produce,	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	2	5	0
3. Produce,	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	3	2	0
4. Produce,	-	-	-	-	-	4	0	0
Seed,	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	3	3	0
5. Produce,	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	3	0	0

OBSERVATIONS.

Five bushels are the most advantageous of these quantities. It should thence appear that above that portion of seed is too much for the profit of the crop. This trial is particularly satisfactory, as there are no breaks in the regularity of the advance in product to that point from which we may suppose the experiment full and clear. What the writers can mean, who have been so strenuous in favour of even *less* seed than the common quantities, *viz.* two, and even one bushel of barley, I cannot devise. If their assertions were half true, more than two bushels, instead of being advantageous, should produce much less; and such large quantities

quantities as four or five bushels, quite pernicious. This point must, therefore, be ranked among the numerous ones about which authors have written without practice.

EXPERIMENT N° 6.

That I might discover the gradations of the product the better, I determined to extend the number of the quantities, and, for that purpose, fixed on smaller pieces of land; which is always requisite, when the variations are numerous. I marked 10 square perches upon a well fallowed piece in field L*, and sowed them the beginning of April 1765, as follows :

- N° 1. With $\frac{1}{5}$ of a pint.
2. With $\frac{2}{5}$ of ditto.
3. With $\frac{3}{5}$ of ditto.
4. With $\frac{4}{5}$ of ditto.
5. With 1 pint.
6. With $1\frac{1}{5}$ ditto.
7. With $1\frac{2}{5}$ ditto.
8. With $1\frac{3}{5}$ ditto.
9. With $1\frac{4}{5}$ ditto.
10. With 1 quart.

The culture, and every article of management, the same in all respects. The produce as follows :

										P.	Q.	P.
N° 1.	-	-	-	-	-	-	-	-	-	0	1	1
2.	-	-	-	-	-	-	-	-	-	0	2	0
3.	-	-	-	-	-	-	-	-	-	0	2	1
4.	-	-	-	-	-	-	-	-	-	0	3	0
5.	-	-	-	-	-	-	-	-	-	0	3	1
6.	-	-	-	-	-	-	-	-	-	0	3	$1\frac{1}{2}$
7.	-	-	-	-	-	-	-	-	-	0	3	$1\frac{1}{2}$
8.	-	-	-	-	-	-	-	-	-	0	4	$0\frac{1}{2}$
9.	-	-	-	-	-	-	-	-	-	0	4	$1\frac{1}{2}$
10.	-	-	-	-	-	-	-	-	-	0	5	1

The proportions of seed and produce *per* acre are as follow :

								P.	Q.	P.
N° 1. Produce,	-	-	-	-	-	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	-	-	-	0	7	0

	P.	Q.	P.
2. Produce, Seed,	-	-	-
Clear produce,	-	-	-
3. Produce, Seed,	-	-	-
Clear produce,	-	-	-
4. Produce, Seed,	-	-	-
Clear produce,	-	-	-
5. Produce, Seed,	-	-	-
Clear produce,	-	-	-
6. Produce, Seed,	-	-	-
Clear produce,	-	-	-
7. Produce, Seed,	-	-	-
Clear produce,	-	-	-
8. Produce, Seed,	-	-	-
Clear produce,	-	-	-
9. Produce, Seed,	-	-	-
Clear produce,	-	-	-
10. Produce, Seed,	-	-	-
Clear produce,	-	-	-

OBSERVATIONS.

Many trials fimilar to this may be tried before a more decisive one is found. The rise of product with seed is perfectly regular : the slight interruption at N° 7. not being considerable enough to deserve a mention. It very evidently appears, that the more the seed the better the crop; at least as far as five bushels. How much further the maxim will hold, must be discovered by other trials.

EXPERIMENT N° 7.

In April 1765 marked 10 square perches of fallow in field M*, and sowed them as follows :

- N° 1. With $\frac{4}{5}$ of a pint.
2. With $1\frac{1}{5}$ of ditto.
3. With $1\frac{3}{5}$ of ditto.
4. With $1\frac{4}{5}$ of ditto.
5. With 1 quart.
6. With 1 quart and $\frac{1}{5}$ of a pint.
7. With 1 ditto and $\frac{2}{5}$ ditto.
8. With 1 ditto and $\frac{3}{5}$ ditto.
9. With 1 ditto and $\frac{4}{5}$ ditto.
10. With 1 quart and 1 pint.

The culture and management the same. The produce as follows :

	P.	Q.	P.
N° 1.	-	0	2 $\frac{1}{2}$
2.	-	0	3 0
3.	-	0	3 $1\frac{1}{2}$
4.	-	0	4 $\frac{1}{2}$
5.	-	0	4 1
6.	-	0	4 1
7.	-	0	4 $1\frac{1}{2}$
8.	-	0	4 $1\frac{1}{2}$
9.	-	0	5 0
10.	-	0	5 $1\frac{1}{2}$

Seed and produce, proportioned *per* acre, are as follows :

	P.	Q.	P.
N° 1. Produce,	-	1	4 0
Seed,	-	0	2 0
Clear produce,	-	1	2 0

							P.	Q.	P.
2. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	4	0
3. Produce,	-	-	-	-	-	-	2	3	3
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	1	7	3
4. Produce,	-	-	-	-	-	-	2	5	1
Seed,	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	2	0	3
5. Produce,	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	2	1	2
6. Produce,	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	0	5	2
Clear produce,	-	-	-	-	-	-	2	1	0
7. Produce,	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	2	1	3
8. Produce,	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	-	2	1	1
9. Produce,	-	-	-	-	-	-	3	1	0
Seed,	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	2	2	0
10. Produce,	-	-	-	-	-	-	3	4	3
Seed,	-	-	-	-	-	-	0	7	2
Clear produce,	-	-	-	-	-	-	2	5	1

OBSER-

OBSERVATIONS.

The general result of this experiment coincides with most of the preceding, and is very decisive in favour of much seed: but the regularity of the effect is broken in N° 6, 7, and 8; it cannot, consistently with the rest of the trial be accounted for, why those numbers should be so near an equality: and why N° 8 should be less than N° 7. But such seeming contradictions will sometimes be met with in experiments. One circumstance is much worthy of observation: the writers who have been the warmest in recommending small quantities of seed, have insisted, that much seed is not only unprofitable, in the mere expence, but absolutely prejudicial to the crop: the contrary of which is here sufficiently evident.

OBSERVATIONS ON the EXPERIMENTS of the Years 1764 and 5.

These years differed very much in respect of season: 1764 was wet, and 1765 remarkably dry. I much wish my trials, during the first of these had been more extensive and complete; but when a man begins his agriculture, he naturally omits many inquiries, the importance of which, afterwards, appears very striking. I shall throw the trials of these two years into one view, by stating the products per acre from each quantity of seed: and then draw the average and compare them.

2 PECKS.						Q. B. P.		
Produce clear in Experiment N° 6,						0	7	0
1 BUSHEL.								
In N° 1.	-	-	-	-	-	0	6	1
2.	-	-	-	-	-	0	7	0
3.	-	-	-	-	-	0	7	0
6.	-	-	-	-	-	1	1	0
Average	-	-	-	-	0 7 1			
1 ½ BUSHEL.								
In N° 2.	-	-	-	-	-	1	3	2
3.	-	-	-	-	-	* 1	4	2
6.	-	-	-	-	-	1	3	0
Average,	-	-	-	-	1 3 2			
2 BUSHELS.								
In N° 1.	-	-	-	-	-	1	4	1
2.	-	-	-	-	-	2	0	0

* 1 bushel 1 peck 1-third, but I rank it as 2.

	Q.	B.	P.
3.	-	-	-
4.	-	-	-
5.	-	-	-
6.	-	-	-
7.	-	-	-
Average,	1	4	3
2 $\frac{1}{2}$ BUSHELS.			
In N ^o 2.	-	-	-
6.	-	-	-
Average,	1	7	1
3 BUSHELS.			
In N ^o 1.	-	-	-
2.	-	-	-
3.	-	-	-
5.	-	-	-
6.	-	-	-
7.	-	-	-
Average,	2	0	3
3 $\frac{1}{2}$ BUSHELS.			
In N ^o 6.	-	-	-
4 BUSHELS.			
In N ^o 1.	-	-	-
3.	-	-	-
4.	-	-	-
5.	-	-	-
6.	-	-	-
7.	-	-	-
Average,	2	4	2
4 $\frac{1}{2}$ BUSHELS.			
In N ^o 6.	-	-	-
7.	-	-	-
Average,	2	2	0
5 BUSHELS.			
In N ^o 3.	-	-	-
5.	-	-	-
6.	-	-	-
7.	-	-	-
Average,	2	6	2
5 $\frac{1}{2}$ BUSHELS.			
In N ^o 7.	-	-	-
6 BUSHELS.			

Q. B. P.

6 BUSHEL.												
In N° 4.	-	-	-	-	-	-	-	-	-	3	2	0
5.	-	-	-	-	-	-	-	-	-	3	0	0
7.	-	-	-	-	-	-	-	-	-	2	1	3
Average,	-	-	-	-	-	-	2	6	2			
6 $\frac{1}{2}$ BUSHEL.												
In N° 7.	-	-	-	-	-	-	-	-	-	2	1	1
7 BUSHEL.												
In N° 7.	-	-	-	-	-	-	-	-	-	2	2	0
7 $\frac{1}{2}$ BUSHEL.												
In N° 7.	-	-	-	-	-	-	-	-	-	2	5	1
8 BUSHEL.												
In N° 4.	-	-	-	-	-	-	-	-	-	3	0	0
10 BUSHEL.												
In N° 4.	-	-	-	-	-	-	-	-	-	2	2	0
12 BUSHEL.												
In N° 4.	-	-	-	-	-	-	-	-	-	2	0	0

Many of these totals being single trials, and not the average of several, it will be proper, further to divide the table thus:

Under 4 bushels, the average of the former averages,										1	4	1
From 4 to 6, both inclusive,	-	-	-	-	-	-	-	-	-	2	4	1
Above 6,	-	-	-	-	-	-	-	-	-	2	3	0

From hence it appears, that from 4 to 6 bushels is the most advantageous quantity of seed barley, according to the experiments of these two years. The great inferiority of the quantities under 4 bushels, shews plainly that less, is by no means adequate to the feeding an acre; above six bushels is far preferable to less than four; but so large a quantity is in these trials evidently less advantageous than from 4 to 6.

What is very astonishing, is the product from the highest quantities. I should conceive that 12 bushels would yield scarce any crop at all, from the excessive thickness of the seed; but we find even that quantity is preferable to underfeeding the land; yields a greater clear produce than 2 bushels, or any less quantity: this is as surprizing to me as it can be to any of my readers. The appearance of these very thickly seeded crops was much against them; the straw short and yellow, but the quantity of the produce much beyond what the appearance indicated. The product of eight bushels is very considerable.

We cannot upon the whole venture, from the trial of these years, to decide any other point absolutely, than the large quantities in general being much superior to the small ones. One very important part of the enquiry I omitted, which is, the proportion between the fertility of the soil

foil and the quantity of seed: for the state of the land must, I apprehend, have great effect relative to quantity of seed. This part of the enquiry I shall remember in future: I much regret the not observing it in these years.

EXPERIMENT N° 8.

Marked 5 pieces of land in field P, each of 20 perches, and sowed the end of April 1766 in the following manner:

- N° 1. With 1 peck.
 2. With 2 pecks.
 3. With $2\frac{1}{4}$ ditto.
 4. With 3 ditto.
 5. With $3\frac{1}{2}$ ditto.

The culture and every article of management were in all respects the same: the produce

										Q. B. P.		
N° 1.	-	-	-	-	-	-	-	-	-	0	2	1
2.	-	-	-	-	-	-	-	-	-	0	2	3
3.	-	-	-	-	-	-	-	-	-	0	3	1
4.	-	-	-	-	-	-	-	-	-	0	3	2
5.	-	-	-	-	-	-	-	-	-	0	4	0

The proportions of seed and produce per acre, are as follow:

N° 1. Produce,	-	-	-	-	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	0
2. Produce,	-	-	-	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	-	-	-	0	4	0
Clear produce.	-	-	-	-	-	-	-	-	-	2	2	0
3. Produce,	-	-	-	-	-	-	-	-	-	3	2	0
Seed,	-	-	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	5	0
4. Produce,	-	-	-	-	-	-	-	-	-	3	4	0
Seed,	-	-	-	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	6	0

5. Pro-

								P.	Q.	P.
5. Produce,	-	-	-	-	-	-	-	4	0	0
Seed,	-	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	-	3	1	0

OBSERVATIONS.

The gradation of increase with the quantity of feed, in the experiment, is unbroken, and proves that seven bushels are a much more advantageous portion than any smaller quantity: this is but a continuation of the result of the former years.

EXPERIMENT N° 9.

In April 1766 marked in field L*, 10 square perches of fallow, and manured them in the exact proportion of 20 loads per acre of a compost, consisting of two parts rotten farm-yard dung, and one of clay; sowed them at the same time in the following manner:

- N° 1. With $\frac{4}{5}$ of a pint.
2. With $1 \frac{1}{5}$ of ditto.
3. With $1 \frac{3}{5}$ of ditto.
4. With $1 \frac{4}{5}$ ditto.
5. With 1 quart.
6. With 1 quart and $\frac{1}{5}$ of a pint.
7. With 1 ditto and $\frac{2}{5}$ ditto.
8. With 1 ditto and $\frac{3}{5}$ ditto.
9. With $1 \frac{4}{5}$ ditto.
10. With 1 quart and 1 pint.

Every article of culture the same: the produce as follows:

N°								P.	Q.	P.
1.	-	-	-	-	-	-	-	0	4	$0 \frac{1}{2}$
2.	-	-	-	-	-	-	-	0	4	$1 \frac{1}{2}$
3.	-	-	-	-	-	-	-	0	7	0
4.	-	-	-	-	-	-	-	0	7	$1 \frac{3}{4}$
5.	-	-	-	-	-	-	-	1	0	0
6.	-	-	-	-	-	-	-	0	7	0
7.	-	-	-	-	-	-	-	0	6	0
8.	-	-	-	-	-	-	-	0	4	1
9.	-	-	-	-	-	-	-	0	3	0
10.	-	-	-	-	-	-	-	0	3	0

Seed and produce proportioned per acre, are as follow:

N°								Q.	B.	P.
1. Produce,	-	-	-	-	-	-	-	2	5	1
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	2	3	1

							Q.	B.	P.
2. Produce,	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	2	4	3
3. Produce,	-	-	-	-	-	-	4	3	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	3	7	0
4. Produce,	-	-	-	-	-	-	4	6	3
Seed,	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	4	2	1
5. Produce,	-	-	-	-	-	-	5	0	0
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	4	3	0
6. Produce,	-	-	-	-	-	-	4	3	0
Seed,	-	-	-	-	-	-	0	5	2
Clear produce,	-	-	-	-	-	-	3	5	2
7. Produce,	-	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	3	0	0
8. Produce,	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	-	2	0	0
9. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	7	0
Clear Produce,	-	-	-	-	-	-	1	0	0
10. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	7	2
Clear produce,	-	-	-	-	-	-	0	7	2

OBSER-

OBSERVATIONS.

This experiment varies extremely from the preceding, in almost every particular. The increase of product stops at 5 bushels; whereas in most of the other trials it goes on even to $7\frac{1}{2}$; but the higher quantities here are evidently pernicious. There is nothing to which this great variation can be attributed but the manuring. The land was well fallowed, and received besides a plentiful dressing of rotten compost; so that the land was in far greater heart than in any of the former trials; and the great variation must therefore be attributed to this cause: a new field of enquiry at once opens upon us: it appears that land artificially rich, does not require near so much seed as poorer soils: in all probability it is the same with land naturally very fertile; there is all the reason in the world for the conclusion. But I cannot try it, not having an acre of rich land in my whole farm. The variation is of the utmost consequence, since the crop between the right and wrong management is vastly considerable; so that large quantities of seed may not only be wasted, but the product at the same time greatly lessened. It is common with all the farmers in this neighbourhood, to seed their ground with the same quantities of barley, let it be rich or poor; dunged, or not dunged: this conduct is palpably absurd, at least according to the result of the trial before us.

I do not apprehend that this experiment turns out any ways contrary to reason: land that is very fertile, or in great heart, makes corn to tiller prodigiously, which, in fact, varies not much from a large quantity of seed: now if much seed was sown on such soils, the tillering of the plants would quite choak up the whole surface, the stalks would absolutely want room to stand, and the roots be equally bounded in the land. But in weaker soils, the barley does not shoot out such numbers of stalks; consequently there is a great deal more room for those proceeding from an additional quantity of seed. The common argument against this reasoning, is to urge the impropriety of expecting weak soils to nourish more plants than richer ones. But this point turns on the vigour and force of the roots of plants, to draw nourishment from every spot around them: a circumstance clearly decisive in favour of the present argument.

Suppose a perch sown with barley, at the rate of a grain in the center of every square foot; we can easily conceive the land to be made so rich as to throw out a large plant, with a multitude of stalks from each seed. The roots are always in proportion to the visible parts of a vegetable; consequently they spread around the spot wherein the seed was deposited, and we will suppose, draw all the vegetable nourishment from the square foot. If there had been more plants, the space would have

been insufficient for more roots, and they must have robbed each other.

And this reasoning is the same, whether the pasture of the roots of a plant of barley in a rich soil, contains a square, foot, yard, or inch. But change the supposition, and instead of a rich soil, suppose a poor one; the whole effect will be changed at once: the grains will sprout, and each become a plant, but for want of fertility in the land, will push the roots to but a little distance, perhaps 3 or 4 inches,* in that case all the rest of the square foot is unoccupied by useful plants, consequently will yield its nourishment to spontaneous ones.

If roots in the poor soil had as great a power of penetrating in search of nourishment as those in a rich one, the case would be different: the crop on the ground would possess all the vegetable nourishment, whether the plants were few or many; and that nourishment would go to the formation of a certain quantity of grain, whether it was the product of many stalks or few.

The vegetable pasture of a plant of barley in poor land may be called 2 square inches, and in very rich soils 6 inches: it is extremely evident that both should not be seeded in the same manner. Another circumstance not to be forgotten, is the article of weeds; for in all the soils with which I have any acquaintance, if you do not fill the soil with useful plants, it will fill itself with useless ones. It cannot maintain above a certain number of either: and I have universally observed, that the thinnest sowed crops have been the fullest of weeds.

EXPERIMENT N° 10.

The middle of April 1766, marked, in field M*, 10 square perches of fallow, and dunged them, at the rate of sixteen loads of rotten farm-yard dung, unmixed, per acre. Sowed them in the following manner:

- N° 1. With $\frac{4}{5}$ of a pint.
2. With $1\frac{1}{5}$ ditto.
3. With $1\frac{3}{5}$ ditto.
4. With $1\frac{4}{5}$ ditto.
5. With 1 quart.
6. With 1 quart and $\frac{1}{5}$ of a pint.
7. With 1 ditto and $\frac{1}{5}$ ditto.
8. With 1 ditto and $\frac{3}{5}$ ditto.
9. With 1 ditto and $\frac{4}{5}$ ditto.
10. With 1 ditto and 1 pint.

* I have taken up barley in poor sandy soils with the utmost care, and could discern no roots above 3 inches long.

The feed and produce, proportioned per acre, are as follow :

[illegible]

								Q. B. P.
7. Produce,	-	-	-	-	-	-	-	3 6 0
Seed,	-	-	-	-	-	-	-	0 6 0
Clear produce,	-	-	-	-	-	-	-	3 0 0
8. Produce,	-	-	-	-	-	-	-	2 7 3
Seed,	-	-	-	-	-	-	-	0 6 2
Clear produce,	-	-	-	-	-	-	-	2 1 1
9. Produce,	-	-	-	-	-	-	-	2 4 0
Seed,	-	-	-	-	-	-	-	0 7 0
Clear produce,	-	-	-	-	-	-	-	1 5 0
10. Produce,	-	-	-	-	-	-	-	2 4 0
Seed,	-	-	-	-	-	-	-	0 7 2
Clear produce,	-	-	-	-	-	-	-	1 4 2

OBSERVATIONS.

This trial coincides very much with the last. Here is again a falling-off in the produce, long before the larger quantities of seed. Five bushels and an half are preferable to any other of these portions; which is a very contrary result to the preceding trials, when no manure was used. It is however observable, that this quantity is more than double what is recommended for all sorts of land by many writers, who talk of a bushel and an half, and two bushels of barley, as highly sufficient for acre under any circumstances.

EXPERIMENT N° II.

April 21st, 1766, marked eight pieces of fallow land in field Q, each of twenty perches, and sowed them as follow: clover with them all.

- N° 1. With 1 peck.
 2. With $1\frac{1}{2}$ ditto.
 3. With 2 pecks.
 4. With $2\frac{1}{4}$ ditto.
 5. With $2\frac{1}{2}$ ditto.
 6. With 3 ditto.
 7. With $3\frac{1}{2}$ ditto.
 8. With 1 bushel.

The

The plowing, sowing, harrowing, and all succeeding operations, were performed exactly at the same time. The produce as follows:

								Q.	B.	P.
N ^o 1.	-	-	-	-	-	-	-	0	2	0
2.	-	-	-	-	-	-	-	0	2	3
3.	-	-	-	-	-	-	-	0	3	0
4.	-	-	-	-	-	-	-	0	2	3
5.	-	-	-	-	-	-	-	0	2	3
6.	-	-	-	-	-	-	-	0	2	1 $\frac{1}{2}$
7.	-	-	-	-	-	-	-	0	2	0
8.	-	-	-	-	-	-	-	0	2	0

The seed and produce, proportioned per acre, are as follows:

								Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	6	0
2. Produce,	-	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	2	3	0
3. Produce,	-	-	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	-	2	4	0
4. Produce,	-	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	-	2	1	2
5. Produce,	-	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	2	1	0
6. Produce,	-	-	-	-	-	-	-	2	3	0
Seed,	-	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	-	1	5	0

7. Produce,

								Q.	B.	P.
7. Produce,	-	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	-	1	1	0
8. Produce,	-	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	-	1	0	0
Clear produce,	-	-	-	-	-	-	-	1	0	0

OBSERVATIONS.

This trial is particularly valuable, from the new variation in it; that of clover being sown with the crops, and in a wet year: so that the mischief which resulted from it was not trifling. The clover husbandry is of such incomparable value in general, that the sowing it with spring-corn should always be taken into the account. Here is also a pretty strong variation in the effect: according to former experience, six or seven bushels should have been the most advantageous quantity of seed; but in this experiment, four bushels exceed all the other portions. This, at first sight, may appear a contradiction to the preceding experience; but a little reflection will clear up the seeming difficulty. It must be owing to the clover, of which there is so full a crop, as to have done mischief to the barley. Now the crop upon a soil can be but to a certain amount, and it matters not greatly whether you call it barley or clover; consequently, a certain portion of clover-seed answers to a given one of barley, which at once resolves the contradiction of this experiment to preceding ones.

EXPERIMENT N° 12.

The first week in May 1766, marked eight half roods of fallow land, in field A*, and sowed them as follows:

- N° 1. With 1 peck.
 2. With $1\frac{1}{2}$ ditto.
 3. With 2 pecks.
 4. With $2\frac{1}{2}$ ditto.
 5. With 3 ditto.
 6. With $3\frac{1}{2}$ ditto.
 7. With 1 bushel.
 8. With $1\frac{1}{2}$ ditto and half a peck.

The culture was perfectly similar. The produce:

N°	1.	2.	3.	4.	5.	6.	7.	8.	Q.	B.	P.
1.	-	-	-	-	-	-	-	-	0	1	3 ¹ / ₂
2.	-	-	-	-	-	-	-	-	0	2	0
3.	-	-	-	-	-	-	-	-	0	3	0
4.	-	-	-	-	-	-	-	-	0	3	1
5.	-	-	-	-	-	-	-	-	0	3	1 ¹ / ₂
6.	-	-	-	-	-	-	-	-	0	3	0
7.	-	-	-	-	-	-	-	-	0	2	1
8.	-	-	-	-	-	-	-	-	0	2	1

Produce and seed, calculated *per* acre, are as follow :

N°	1.	2.	3.	4.	5.	6.	7.	8.	Q.	B.	P.
1. Produce,	-	-	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	1	5	0
2. Produce,	-	-	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	1	5	0
3. Produce,	-	-	-	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	-	-	2	4	0
4. Produce,	-	-	-	-	-	-	-	-	3	2	0
Seed,	-	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	-	2	5	0
5. Produce,	-	-	-	-	-	-	-	-	3	3	0
Seed,	-	-	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	-	-	2	5	0
6. Produce,	-	-	-	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	-	-	2	1	0
7. Produce,	-	-	-	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	-	-	-	0	8	0
Clear produce,	-	-	-	-	-	-	-	-	1	2	0

8. Produce,	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	0	9	0
Clear produce,	-	-	-	-	-	1	1	0

OBSERVATIONS.

This trial is a further confirmation of the result of former ones: five and six bushels are the quantities preferable to all the rest. Now it is to be observed, that trefoile was sown with all this crop; therefore, say some, according to the reasoning in the last experiment, less quantities of seed should be more advantageous. But I answer, that trefoile is by no means such a vegetable as clover: it is never so luxuriant; insomuch, that I do not recollect having ever seen a crop that damaged the corn with which it was sown; whereas the common broad clover frequently overtops barley. Thus it is no contradiction to find the proper quantity of seed, when trefoile is sown with it, nearly as great as when no grass at all is sown. However, these points are all of too much consequence for one or two experiments to decide: future trials may, perhaps, reduce the enquiry to a certainty upon these soils.

EXPERIMENT N° 13.

May 9th 1766, marked 8 pieces in field Z, (winter fallowed after tares) each of 10 perches, and sowed them in the following manner:

- N^o 1. With $\frac{1}{2}$ a peck.
 2. With $\frac{3}{4}$ ditto.
 3. With 1 ditto.
 4. With 1 $\frac{1}{4}$ ditto.
 5. With 1 $\frac{1}{2}$ ditto.
 6. With 1 $\frac{3}{4}$ ditto.
 7. With 2 ditto.
 8. With 2 $\frac{1}{4}$ ditto.

The culture and management in all respects the same: the produce,

										2. B. P.		
N ^o 1.	-	-	-	-	-	-	-	-	-	0	0	2
2.	-	-	-	-	-	-	-	-	-	0	0	3 $\frac{1}{2}$
3.	-	-	-	-	-	-	-	-	-	0	I	0
4.	-	-	-	-	-	-	-	-	-	0	I	I
5.	-	-	-	-	-	-	-	-	-	0	I	1 $\frac{1}{2}$
6.	-	-	-	-	-	-	-	-	-	0	I	I
										7.		

Q. B. P.

7.	-	-	-	-	-	-	0	0	3½
8.	-	-	-	-	-	-	0	0	3½
The seed and produce calculated <i>per</i> acre are as follow,									
Nº 1. Produce,	-	-	-	-	-	-	1	0	0
Seed,	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	0	6	0
2. Produce,	-	-	-	-	-	-	1	6	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	3	0
3. Produce,	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	1	4	0
4. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	5	0
Clear Produce,	-	-	-	-	-	-	1	7	0
5. Produce,	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	2	0	0
6. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	1	5	0
7. Produce,	-	-	-	-	-	-	1	6	0
Seed,	-	-	-	-	-	-	0	8	0
Clear produce	-	-	-	-	-	-	0	6	0
8. Produce,	-	-	-	-	-	-	1	6	0
Seed,	-	-	-	-	-	-	0	9	0
Clear produce,	-	-	-	-	-	-	0	5	0

OBSERVATIONS.

The poverty of this field prevented any of these crops from being considerable; but the superiority of six bushels to the other quantities of seed, is a strong confirmation of the preceding experience. In many trials, no one can reasonably expect, that the gradations, according to varied circumstances of culture, should be regular: they will be often broken, without any visible reasons for it; and such variations may be owing to circumstances of which the most attentive cultivator is ignorant.

EXPERIMENT N° 14.

May 24th 1766, marked ten pieces of barley land, that had been winter fallowed, after pease, each of 20 perches, in field Y; and sowed them as follow,

- N° 1. With 1 peck of barley.
- 2. With $1 \frac{1}{2}$ ditto.
- 3. With 2 ditto.
- 4. With $2 \frac{1}{4}$ ditto.
- 5. With $2 \frac{1}{2}$ ditto.
- 6. With $2 \frac{3}{4}$ ditto.
- 7. With 3 ditto.
- 8. With $3 \frac{1}{4}$ ditto.
- 9. With $3 \frac{1}{2}$ ditto.
- 10. With 1 bushel.

The culture in all respects the same: The produce:

N°	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Q.	B.	P.
1.	-	-	-	-	-	-	-	-	-	-	0	1	0
2.	-	-	-	-	-	-	-	-	-	-	0	1	2
3.	-	-	-	-	-	-	-	-	-	-	0	2	0
4.	-	-	-	-	-	-	-	-	-	-	0	2	1
5.	-	-	-	-	-	-	-	-	-	-	0	2	$1 \frac{1}{2}$
6.	-	-	-	-	-	-	-	-	-	-	0	2	3
7.	-	-	-	-	-	-	-	-	-	-	0	3	0
8.	-	-	-	-	-	-	-	-	-	-	0	2	1
9.	-	-	-	-	-	-	-	-	-	-	0	2	1
10.	-	-	-	-	-	-	-	-	-	-	0	1	$1 \frac{1}{2}$

Seed and produce calculated per acre, are as follow,

N° 1. Produce,	-	-	-	-	-	-	-	-	-	-	1	0	0
Seed,	-	-	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	-	0	6	0
												2. Pro-	

Q. B. P.

2. Produce,	-	-	-	-	-	1	4	0
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	1	1	0
3. Produce,	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	1	4	0
4. Produce,	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	1	5	2
5. Produce,	-	-	-	-	-	2	3	0
Seed,	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	1	6	0
6. Produce,	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	0	5	2
Clear produce,	-	-	-	-	-	2	0	2
7. Produce,	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	2	2	0
8. Produce,	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	1	3	2
9. Produce,	-	-	-	-	-	2	2	0
Seed,	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	1	3	0
10. Produce,	-	-	-	-	-	1	3	0
Seed,	-	-	-	-	-	1	0	0
Clear produce,	-	-	-	-	-	0	3	0

OBSER-

OBSERVATIONS.

This experiment is a further proof, that on soils that are poor and out of heart, a large quantity of seed should be sown. Six bushels are the most beneficial portion: but the product falls off prodigiously, by raising this quantity to 8 bushels; which would not have happened in some of my fields: but the variations of soils are very great, and oftentimes equally unknown.

EXPERIMENT N^o 15.

The beginning of April marked, in field L*, ten square perches of well-fallowed land, that had been amply manured with farm-yard compost, about six months before, at the rate of twenty loads per acre: manured it again at sowing with foot and malt-dust, at the rate of forty bushels per acre: sowed the perches with the following quantities of seed:

- N^o 1. With $\frac{2}{5}$ of a pint.
2. With $\frac{3}{5}$ of ditto.
3. With $\frac{4}{5}$ of ditto.
4. With 1 pint.
5. With $1\frac{1}{5}$ ditto.
6. With $1\frac{2}{5}$ ditto.
7. With $1\frac{4}{5}$ ditto.
8. With 1 quart.
9. With 1 quart and $\frac{2}{5}$ of a pint.
10. With 1 quart and $\frac{4}{5}$ ditto.

The management in every respect the same: the produce as follows:

N ^o	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	P.	Q.	P.
1.	-	-	-	-	-	-	-	-	-	-	0	3	1
2.	-	-	-	-	-	-	-	-	-	-	0	4	0
3.	-	-	-	-	-	-	-	-	-	-	0	7	0
4.	-	-	-	-	-	-	-	-	-	-	1	0	0
5.	-	-	-	-	-	-	-	-	-	-	1	1	1
6.	-	-	-	-	-	-	-	-	-	-	1	4	0
7.	-	-	-	-	-	-	-	-	-	-	1	5	0
8.	-	-	-	-	-	-	-	-	-	-	0	7	1
9.	-	-	-	-	-	-	-	-	-	-	0	5	1
10.	-	-	-	-	-	-	-	-	-	-	0	3	1

The

The seed and produce, calculated acre, are as follow :

							Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	2	0	2
2. Produce,	-	-	-	-	-	-	2	4	0
Seed.	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	2	2	2
3. Produce,	-	-	-	-	-	-	4	3	0
Seed,	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	4	1	0
4. Produce,	-	-	-	-	-	-	5	0	0
Seed,	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	4	5	2
5. Produce,	-	-	-	-	-	-	5	7	2
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	5	4	2
6. Produce,	-	-	-	-	-	-	7	4	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	7	0	0
7. Produce,	-	-	-	-	-	-	8	1	0
Seed,	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	7	4	2
8. Produce,	-	-	-	-	-	-	4	5	2
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	4	0	2

9. Produce,

	-	-	-	-	-	-	B. P.
9. Produce,	-	-	-	-	-	-	3 3 2
Seed,	-	-	-	-	-	-	<u>0 6 0</u>
Clear produce,	-	-	-	-	-	-	<u>2 5 2</u>
10. Produce,	-	-	-	-	-	-	2 1 2
Seed,	-	-	-	-	-	-	<u>0 7 0</u>
Clear produce,	-	-	-	-	-	-	<u>I 2 2</u>

OBSERVATIONS.

This comparison, upon the whole, is very decisive, though not so regular in the result as many. Such irregularities, I have often remarked, are not to be accounted for. Four bushels and two pecks are superior to any other quantity; four bushels come near it. From hence we find, that when the soil is so very rich, much the less seed is requisite: this is perfectly consonant with several of the other trials. We have found, in many experiments, that 5, $5\frac{1}{2}$, and even 6 and 7 bushels, are quantities by no means too great for an acre of land out of heart. How important it is to distribute the seed proportionably to the state of the soil! there are near five quarters per acre, neat crop, between six bushels and four and an half. Such a vast loss may be incurred, from blindly feeding one soil in the same manner as another!

Some quick transitions in the scale of product are a little surprising. The small rise from N° 1 to 2 is not consistent with the other parts of the trial. From N° 5 to 6, the rise is as quick as it is slow in the other. The great fall from N° 7 to 8 is perfectly unaccountable; and also from 8 to 9. But very few experiments are perfectly free from such contradictions.

OBSERVATIONS on the EXPERIMENTS of the Year 1766.

Trials in agriculture depend so extremely on season, that we should never, either in registering or reading them, forget the general character of the year; whether it is wet or dry, fruitful or unfruitful. The year 1766 was remarkably wet, and to such a degree, that the products of the earth in wet soils were very trifling: many of my neighbours, who do not rank in the better class of farmers, had crops that were far short of paying expences, and some that did not even return the seed. Now so peculiar

peculiar a season cannot be thought entirely without influence upon any part of husbandry, and must have a certain though unknown effect on the quantities of seed proper for various soils; but the precise influence of seasons requires a much greater experience than I am master of, to analyse: perhaps it is impossible to determine it. All we can do is to be as observing and accurate as possible, and endeavour to remark what strong deviations from common rules, are occasioned by great variations of season: however, when we say, that from three to four, or from four to six bushels of barley, are proper to seed an acre, under such and such circumstances, we should remember to throw in the general nature of the season; because variations may be occasioned by that, sufficient to affect, at least, the particular quantities.—I shall proceed to state the averages of these trials, as I have already done with former years.

1 BUSHEL.					Q.	B.	P.
In Experiment N ^o 15. manured,	-	-	-	-	2	0	2
1½ BUSHEL.							
In Experiment N ^o 15. manured,	-	-	-	-	2	2	2
2 BUSHEL.							
In Experiment N ^o 8.	-	-	-	-	2	0	0
9. manured,	-	-	-	-	2	3	1
10. ditto,	-	-	-	-	2	2	0
11. clover,	-	-	-	-	1	6	0
12.	-	-	-	-	1	5	0
13.	-	-	-	-	0	6	0
14.	-	-	-	-	0	6	0
15. manured,	-	-	-	-	4	1	0
Average,	-	-	-	1	7	2	
Ditto unmanured alone, and exclusive of clover,	-	-	-	1	2	1	
2½ BUSHEL.							
In Experiment N ^o 15. manured	-	-	-	-	4	5	2
3 BUSHEL.							
In Experiment N ^o 9. manured,	-	-	-	-	2	4	3
10. ditto,	-	-	-	-	2	1	0
11. clover,	-	-	-	-	2	3	0
12.	-	-	-	-	1	5	0
13.	-	-	-	-	1	3	0
14.	-	-	-	-	1	1	0
15. manured,	-	-	-	-	5	4	2
Average,	-	-	-	2	3	0	
Unmanured,	-	-	-	1	3	0	
Vol. I.			E		4	BUSHEL.	

4 BUSHEL.

Q. B. P.

In Experiment N° 8.	-	-	-	-	2	2	0
9. manured,	-	-	-	-	3	7	0
10. ditto,	-	-	-	-	2	7	2
11. clover,	-	-	-	-	2	4	0
12.	-	-	-	-	2	4	0
13.	-	-	-	-	1	4	0
14.	-	-	-	-	1	4	0
15. manured,	-	-	-	-	7	0	0
Average,	-	-	-	-	3	0	0
Unmanured,	-	-	-	-	1	7	2

4½ BUSHEL.

In Experiment N° 9.	manured,	-	-	-	4	2	1
10. ditto,	-	-	-	-	3	5	1
11. clover,	-	-	-	-	2	1	2
14.	-	-	-	-	1	5	2
15. manured,	-	-	-	-	7	4	2
Average,	-	-	-	-	3	7	0
Unmanured,	-	-	-	-	2	5	1

5 BUSHEL.

In Experiment N° 8.	-	-	-	-	2	5	0
9. manured,	-	-	-	-	4	3	0
10. ditto,	-	-	-	-	4	1	3
11. clover,	-	-	-	-	2	1	0
12.	-	-	-	-	2	5	0
13.	-	-	-	-	1	7	0
14.	-	-	-	-	1	6	0
15. manured,	-	-	-	-	4	0	2
Average,	-	-	-	-	2	7	2
Unmanured,	-	-	-	-	2	1	3

5½ BUSHEL.

In Experiment N° 9.	manured,	-	-	-	3	5	2
10. ditto,	-	-	-	-	4	3	3
14.	-	-	-	-	2	0	2
Average,	-	-	-	-	3	3	1
Unmanured,	-	-	-	-	2	0	2

6 BUSHEL.

In Experiment N° 8.	-	-	-	-	2	6	0
9. manured,	-	-	-	-	3	0	0
10. ditto,	-	-	-	-	3	0	0
11. clover,	-	-	-	-	1	5	0

12.

Chap. II.

B A R L E Y.

35

Q. B. P.

	12.	-	-	-	-	2	5	0
	13.	-	-	-	-	2	0	0
	14.	-	-	-	-	2	2	0
Average,	-	-	-	-	-	2	3	2
Unmanured,	-	-	-	-	-	2	3	1
6 $\frac{1}{2}$ BUSHELS.								
In Experiment N°	9.	manured,	-	-	-	2	0	0
	10.	ditto,	-	-	-	2	1	1
	14.	-	-	-	-	1	3	2
Average,	-	-	-	-	-	1	6	3
Unmanured,	-	-	-	-	-	1	3	2
7 BUSHELS.								
In Experiment N°	8.	-	-	-	-	3	1	0
	9.	manured,	-	-	-	1	0	0
	10.	ditto,	-	-	-	1	5	0
	11.	clover,	-	-	-	1	1	0
	12.	-	-	-	-	2	1	0
	13.	-	-	-	-	1	5	0
	14.	-	-	-	-	1	3	0
Average,	-	-	-	-	-	1	5	2
Unmanured,	-	-	-	-	-	2	0	2
7 $\frac{1}{2}$ BUSHELS.								
In Experiment N°	9.	manured,	-	-	-	0	7	2
	10.	ditto,	-	-	-	1	4	2
Average,	-	-	-	-	-	1	2	0
8 BUSHELS.								
In Experiment N°	11.	clover,	-	-	-	1	0	0
	12.	-	-	-	-	1	2	0
	13.	-	-	-	-	0	6	0
	14.	-	-	-	-	0	3	0
Average,	-	-	-	-	-	0	6	3
Unmanured,	-	-	-	-	-	0	6	1
9 BUSHELS.								
In Experiment N°	12.	-	-	-	-	1	1	0
	13.	-	-	-	-	0	5	0
Average,	-	-	-	-	-	0	7	0

This state of the averages shews in general the proportions; but it will be further necessary to extract the manured articles.

	Unmanured *.				Manured.		
1 Bushel	-	-	-	-	2	0	2
1½ ditto	-	-	-	-	2	2	2
2 ditto	-	-	-	1 2 1	2	7	1
2½ ditto	-	-	-	-	4	5	2
3 ditto	-	-	-	1 3 0	3	3	1
4 ditto	-	-	-	1 7 2	4	4	3
4½ ditto	-	-	-	2 5 1	5	1	1
5 ditto	-	-	-	2 1 3	4	1	3
5½ ditto	-	-	-	2 0 2	4	0	2
6 ditto	-	-	-	2 3 1	3	0	0
6½ ditto	-	-	-	1 3 2	2	0	2
7 ditto	-	-	-	2 0 2	1	2	2
7½ ditto	-	-	-	1 2 0	1	2	0
8 ditto	-	-	-	0 6 1	-	-	-
9 ditto	-	-	-	0 7 0	-	-	-

The reader, doubtless, carries in his own mind one circumstance, which should not be forgotten.—These *calculated* comparisons are not of the same authority as experimental ones; nor are the experiments under every head of equal number: but nevertheless they have a great utility. The manured averages, from a small and middling quantity of seed, we find vastly exceed the unmanured ones; but in the larger portions, the latter are equal and preferable to the former: which is a remarkable proof of what was before advanced, that the quantity of seed should be in proportion to the poverty of the soil.

EXPERIMENT N° 16.

The middle of April 1767, marked 10 square perches in field L*, (turnep land in common culture), and sowed them in the following manner:

- N° 1. With $\frac{4}{5}$ of a pint
2. With $1 \frac{1}{5}$ of ditto.
3. With $1 \frac{3}{5}$ of ditto.
4. With $1 \frac{4}{5}$ of ditto.
5. With 1 quart.
6. With 1 quart and $\frac{1}{5}$ of a pint.
7. With 1 ditto and $\frac{2}{5}$ ditto.
8. With 1 ditto and $\frac{3}{5}$ ditto.
9. With 1 ditto and $\frac{4}{5}$ ditto.
10. With 1 quart and 1 pint.

* Rejecting the clover.

The

The culture, and management, the same: The produce as follows:

										P.	Q.	P.
N ^o 1.	-	-	-	-	-	-	-	-	-	0	2	0
2.	-	-	-	-	-	-	-	-	-	0	3	1 $\frac{1}{2}$
3.	-	-	-	-	-	-	-	-	-	0	4	0 $\frac{1}{2}$
4.	-	-	-	-	-	-	-	-	-	0	4	1 $\frac{1}{2}$
5.	-	-	-	-	-	-	-	-	-	0	5	0
6.	-	-	-	-	-	-	-	-	-	0	5	1
7.	-	-	-	-	-	-	-	-	-	0	5	1 $\frac{1}{2}$
8.	-	-	-	-	-	-	-	-	-	0	5	0
9.	-	-	-	-	-	-	-	-	-	0	4	1 $\frac{1}{2}$
10.	-	-	-	-	-	-	-	-	-	0	3	1 $\frac{1}{2}$

Seed and produce proportioned *per* acre are as follow:

										Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	0	0
2. Produce,	-	-	-	-	-	-	-	-	-	2	3	3
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	3
3. Produce,	-	-	-	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	0
4. Produce,	-	-	-	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	-	-	-	2	3	1
5. Produce,	-	-	-	-	-	-	-	-	-	3	1	0
Seed,	-	-	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	4	0

6. Produce,

OBSERVATIONS.

EXPERIMENT N° 17.

Nº I.

- Clear product

P. Q. P.

○	2	○	$\frac{1}{2}$
○	3	○	$1\frac{1}{2}$
○	4	○	$1\frac{1}{2}$
○	4	○	$1\frac{1}{2}$
○	5	○	1
○	5	○	$1\frac{1}{2}$
○	6	○	
○	4	○	$1\frac{1}{2}$
○	3	○	$1\frac{1}{2}$
○	3	○	

Q. B. P.

$$\begin{array}{r}
 \begin{array}{rrr}
 I & 3 & I \\
 O & 2 & O
 \end{array} \\
 \hline
 \begin{array}{rrr}
 I & I & I
 \end{array} \\
 \hline
 \begin{array}{rrr}
 2 & 3 & 3 \\
 O & 2 & 2
 \end{array} \\
 \hline
 \begin{array}{rrr}
 2 & I & I
 \end{array} \\
 \hline
 \begin{array}{rrr}
 2 & 7 & 3 \\
 O & 3 & 2
 \end{array} \\
 \hline
 \begin{array}{rrr}
 2 & 4 & I
 \end{array} \\
 \hline
 \begin{array}{rrr}
 2 & 7 & 3 \\
 O & 4 & O
 \end{array} \\
 \hline
 \begin{array}{rrr}
 2 & 3 & 3
 \end{array} \\
 \hline
 \text{5. Pro-}
 \end{array}$$

								2. B. P.		
5. Produce,	-	-	-	-	-	-	-	3	3	2
Seed,	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	2	6	2
6. Produce,	-	-	-	-	-	-	-	3	4	3
Seed,	-	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	-	2	6	3
7. Produce,	-	-	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	-	2	7	0
8. Produce,	-	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	-	0	7	2
Clear produce,	-	-	-	-	-	-	-	2	0	1
9. Produce,	-	-	-	-	-	-	-	2	3	3
Seed,	-	-	-	-	-	-	-	0	8	2
Clear produce,	-	-	-	-	-	-	-	1	3	1
10. Produce,	-	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	9	0
Clear produce,	-	-	-	-	-	-	-	0	6	0

OBSERVATIONS.

The result of this experiment is very decisive: the rise from the beginning, and the fall to the end, mark a mean quantity that must be peculiarly advantageous: the three numbers 5, 6, and 7 bushels, are nearly equal; 7 the best: this shews strongly, that the smaller quantities are not sufficient for an acre under these circumstances, and the larger ones too much. The smallness of the produce from 9 bushels, proves that we may as easily over as under-feed the land, and that the consequences in excess are as bad.

EXPER-

EXPERIMENT N° 18.

Marked 7 pieces of turnep land, each 10 perches, (well dunged for the turneps) in field O, the 20th of April 1767; and sowed them as follows:

N° 1. With $\frac{1}{2}$ a peck of barley.

2. With $\frac{3}{4}$ ditto.

3. With 1 peck.

4. With $1\frac{1}{4}$ ditto.

5. With $1\frac{1}{2}$ ditto.

6. With $1\frac{3}{4}$ ditto.

7. With 2 pecks.

The management of the whole, and the rest of the field was perfectly similar: The produce as follows:

										Q.	B.	P.
N° 1.	.	-	-	-	-	-	-	-	-	0	1	0
2.	-	-	-	-	-	-	-	-	-	0	1	$3\frac{1}{2}$
3.	-	-	-	-	-	-	-	-	-	0	2	1
4.	-	-	-	-	-	-	-	-	-	0	2	$1\frac{1}{2}$
5.	-	-	-	-	-	-	-	-	-	0	1	3
6.	-	-	-	-	-	-	-	-	-	0	1	2
7.	-	-	-	-	-	-	-	-	-	0	0	3

The seed and produce, proportioned *per* acre, are as follow:

N° 1. Produce,	-	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	6	0
2. Produce,	-	-	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	3	3	0
3. Produce,	-	-	-	-	-	-	-	4	4	0
Seed,	-	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	-	4	0	0
4. Produce,	-	-	-	-	-	-	-	4	6	0
Seed,	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	4	1	0

OBSERVATIONS.

EXPERIMENT N° 19.

N^o 1. With $\frac{1}{2}$ a peck.
 2. With $\frac{3}{4}$ of ditto.
 3. With 7 quarts.
 4. With 1 peck.
 5. With $1\frac{1}{4}$ ditto.
 6. With $1\frac{1}{2}$ ditto.
 7. With 1 peck and 5 quarts.
 8. With $1\frac{3}{4}$ peck.
 9. With 1 peck and 7 quarts.
 10. With 2 pecks.

The management in every respect the same: The produce

							Q.	B.	P.
N ^o 1.	-	-	-	-	-	-	0	0	3
2.	-	-	-	-	-	-	0	0	3 $\frac{1}{2}$
									3.

										Q.	B.	P.
3.	-	-	-	-	-	-	-	-	-	0	1	0
4.	-	-	-	-	-	-	-	-	-	0	1	1
5.	-	-	-	-	-	-	-	-	-	0	1	$1\frac{1}{4}$
6.	-	-	-	-	-	-	-	-	-	0	1	$1\frac{1}{2}$
7.	-	-	-	-	-	-	-	-	-	0	1	0
8.	-	-	-	-	-	-	-	-	-	0	1	0
9.	-	-	-	-	-	-	-	-	-	0	0	3
10.	-	-	-	-	-	-	-	-	-	0	0	3

Seed and produce, calculated *per* acre, are as follow :

										Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	-	-	-	1	4	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	2	0
2. Produce,	-	-	-	-	-	-	-	-	-	1	6	0
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	3	0
3. Produce,	-	-	-	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	-	1	4	2
4. Produce,	-	-	-	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	0
5. Produce,	-	-	-	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	1	0
6. Produce,	-	-	-	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	0

7. Produce,	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	-	1	1	2
8. Produce,	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	1	1	0
9. Produce,	-	-	-	-	-	-	1	4	0
Seed,	-	-	-	-	-	-	0	7	2
Clear produce,	-	-	-	-	-	-	0	4	2
10. Produce,	-	-	-	-	-	-	1	4	0
Seed,	-	-	-	-	-	-	1	0	0
Clear produce,	-	-	-	-	-	-	0	4	0

OBSERVATIONS.

Four, five, and six bushels, are, in this experiment, more advantageous than any other quantities. This is but a continuation of former experience. And I doubt not but we should find a similar effect in many thousands of such trials, if made under a simularity of such circumstances.

EXPERIMENT N° 20.

Marked, the 4th of May 1767, ten pieces of winter-fallowed land after oats, in field I, each of ten perches, and sowed them as follows:

- N° 1. With $\frac{1}{2}$ a peck.
 2. With $\frac{3}{4}$ of ditto.
 3. With 7 quarts.
 4. With 1 peck.
 5. With $1\frac{1}{4}$ ditto.
 6. With $1\frac{1}{2}$ ditto.
 7. With 1 peck and 5 quarts.
 8. With $1\frac{3}{4}$ of a peck.
 9. With 1 peck and 7 quarts.
 10. With 2 pecks.

Every

Q. B. P.

Nº	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	0	1	2	3	4	5	6	7	8	9
1.	-	-	-	-	-	-	-	-	-	-	0	0	3							
2.	-	-	-	-	-	-	-	-	-	-	0	0	3							
3.	-	-	-	-	-	-	-	-	-	-	0	1	0							
4.	-	-	-	-	-	-	-	-	-	-	0	1	1							
5.	-	-	-	-	-	-	-	-	-	-	0	1	1	$\frac{1}{4}$						
6.	-	-	-	-	-	-	-	-	-	-	0	1	2							
7.	-	-	-	-	-	-	-	-	-	-	0	1	2							
8.	-	-	-	-	-	-	-	-	-	-	0	1	1							
9.	-	-	-	-	-	-	-	-	-	-	0	1	0							
10.	-	-	-	-	-	-	-	-	-	-	0	1	0							

Q. B. P.

N ^o 1. Produce,	-	-	-	-	-	-	1	4	0
Seed,	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	1	2	0
2. Produce,	-	-	-	-	-	-	1	4	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	1	0
3. Produce,	-	-	-	-	-	-	2	0	0
Seed,	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	1	4	2
4. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	2	0	0
5. Produce,	-	-	-	-	-	-	2	6	0
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	2	1	0
6. Produce,	-	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	2	2	0
7. Produce,	-	-	-	-	-	-	2	2	0

OBSERVATIONS.

This is another confirmation of the preceding trials : six bushels more advantageous than any other quantity. I shall no longer, in this farm, have an opportunity of prosecuting this enquiry ; but I believe if this was not the case, I should reduce my future trials to a few variations, under the conviction of the point being demonstrated.

EXPERIMENT N° 21.

In field L*, marked ten square perches of fallow, the beginning of April, and manured them all, at the rate of twenty loads *per* acre of rotten dung: then sowed them as follow:

- N^o 1. With $\frac{4}{5}$ of a pint.
 2. With 1 pint.
 3. With $1\frac{1}{5}$ ditto.
 4. With $1\frac{2}{5}$ ditto.
 5. With $1\frac{3}{5}$ ditto.
 6. With $1\frac{4}{5}$ ditto.
 7. With 1 quart.
 8. With 1 quart and $\frac{1}{5}$ of a pint.
 9. With 1 quart and $\frac{2}{5}$ ditto.
 10. With 1 ditto and $\frac{3}{5}$ ditto.

The

The management, in all respects, the same. The produce:

N.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	P.	Q.	P.
1.	-	-	-	-	-	-	-	-	-	-	0	4	$1\frac{1}{2}$
2.	-	-	-	-	-	-	-	-	-	-	0	5	$0\frac{1}{2}$
3.	-	-	-	-	-	-	-	-	-	-	0	5	$1\frac{1}{2}$
4.	-	-	-	-	-	-	-	-	-	-	0	6	0
5.	-	-	-	-	-	-	-	-	-	-	0	6	1
6.	-	-	-	-	-	-	-	-	-	-	0	6	$1\frac{1}{2}$
7.	-	-	-	-	-	-	-	-	-	-	0	5	$1\frac{1}{2}$
8.	-	-	-	-	-	-	-	-	-	-	0	5	0
9.	-	-	-	-	-	-	-	-	-	-	0	5	0
10.	-	-	-	-	-	-	-	-	-	-	0	4	0

Seed and produce, proportioned *per* acre, are as follows:

							Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	0	2	0
							<hr/>		
Clear produce,	-	-	-	-	-	-	2	5	3
							<hr/>		
2. Produce,	-	-	-	-	-	-	3	2	1
Seed,	-	-	-	-	-	-	0	2	2
							<hr/>		
Clear produce,	-	-	-	-	-	-	2	7	3
							<hr/>		
3. Produce,	-	-	-	-	-	-	3	3	3
Seed,	-	-	-	-	-	-	0	3	0
							<hr/>		
Clear produce	-	-	-	-	-	-	3	0	3
							<hr/>		
4. Produce,	-	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	-	0	3	2
							<hr/>		
Clear produce,	-	-	-	-	-	-	3	2	2
							<hr/>		
5. Produce,	-	-	-	-	-	-	4	0	2
Seed,	-	-	-	-	-	-	0	4	0
							<hr/>		
Clear produce,	-	-	-	-	-	-	3	4	2
							<hr/>		
6. Produce,	-	-	-	-	-	-	4	1	3
Seed,	-	-	-	-	-	-	0	4	2
							<hr/>		
Clear produce,	-	-	-	-	-	-	3	5	1
							<hr/>		
							7. Produce,		

							2. B. P.		
7. Produce,	-	-	-	-	-	-	3	3	3
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	2	6	3
8. Produce,	-	-	-	-	-	-	3	1	0
Seed,	-	-	-	-	-	-	0	5	2
Clear produce,	-	-	-	-	-	-	2	3	2
9. Produce,	-	-	-	-	-	-	3	1	0
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	2	3	0
10. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	-	1	5	2

OBSERVATIONS.

This experiment is extremely decisive: the gradual rise and fall in product, marks very strongly the advantageous quantity. Now 4 bushels and an half being so much lower than the best portions of seed, when no manure is used, proves sufficiently, that circumstance to be the cause of the variation: which result is perfectly consistent with that of former trials.

EXPERIMENT N° 22.

Marked in field L*, marked 10 square perches of well fallowed land, that had been manured 6 months ago, at the rate of 20 loads of rotten dung *per* acre: manured it again at the rate of 10 loads of rich compost *per* acre, consisting of coal ashes, hog dung, and malt dust, sprinkled with urine; and then sowed them the beginning of April as follows:

- N° 1. With $\frac{1}{5}$ of a pint.
 2. With $\frac{2}{5}$ of ditto.
 3. With $\frac{3}{5}$ of ditto.
 4. With $\frac{4}{5}$ of ditto.
 5. With 1 pint.
 6. With $1\frac{1}{5}$ ditto.
 7. With $1\frac{2}{5}$ ditto.

8. With

8. With $1\frac{1}{5}$ ditto.

9. With $1\frac{4}{9}$ ditto.

10. With 1 quart.

The management was in all respects the same : the produce as follows :

										P.	Q.	P.
N ^o 1.	-	-	-	-	-	-	-	-	-	0	2	0
2.	-	-	-	-	-	-	-	-	-	0	4	$0\frac{1}{2}$
3.	-	-	-	-	-	-	-	-	-	0	6	1
4.	-	-	-	-	-	-	-	-	-	1	2	0
5.	-	-	-	-	-	-	-	-	-	1	6	0
6.	-	-	-	-	-	-	-	-	-	1	7	1
7.	-	-	-	-	-	-	-	-	-	1	0	0
8.	-	-	-	-	-	-	-	-	-	0	6	0
9.	-	-	-	-	-	-	-	-	-	0	4	$1\frac{1}{2}$
10.	-	-	-	-	-	-	-	-	-	0	4	1

Seed and produce, proportioned *per* acre, are as follow :

										Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	-	-	-	-	-	1	1	2
2. Produce,	-	-	-	-	-	-	-	-	-	2	5	1
Seed.	-	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	4	1
3. Produce,	-	-	-	-	-	-	-	-	-	4	0	0
Seed,	-	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	-	3	6	2
4. Produce,	-	-	-	-	-	-	-	-	-	6	2	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	6	0	0
5. Produce,	-	-	-	-	-	-	-	-	-	8	6	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	-	8	3	2

								Q.	B.	P.
6. Produce,	-	-	-	-	-	-	-	9	5	2
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	9	2	2
7. Produce,	-	-	-	-	-	-	-	5	0	0
Seed,	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	4	4	2
8. Produce,	-	-	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	-	3	2	0
9. Produce,	-	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	-	0	4	2
Clear Produce,	-	-	-	-	-	-	-	2	3	1
10. Produce,	-	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	-	2	1	2

OBSERVATIONS.

This experiment confirms very strongly the result of all the preceding experience, but the most advantageous quantity of seed (3 bushels) is lower than I expected: this however is owing to the extreme richness of the soil, from manuring uncommonly effectual, upon a clean fallow, in which probably every grain of it took effect. The plants of this barley came up with surprizing vigor, and made such numbers of shoots, that every grain became a tuft; and in those perches which were over-seeded, it was all matted quite thickly together, and did not escape the mildew, tho' N° 1, 2, 3, 4, were not the least touched, which is a little remarkable. There can be no doubt from this trial, that the quantity of seed (to a certain portion), should be small in proportion to the richness of the land.

OBSERVATIONS on the EXPERIMENTS of 1767.

The year 1767 was as remarkable for the wetness of the season as 1766, and rather worse in this neighbourhood in the crops of corn. When therefore

therefore we find in these trials, that certain portions of seed yield good and even great crops, we may be certain that the utility of sowing the proper quantity is very great. I shall proceed to state as before, the average products of each quantity, leaving out the two experiments that were manured.

2 BUSHEL S.

							Q.	B.	P.
In experiment N° 16.	-	-	-	-	-	-	1	0	0
17.	-	-	-	-	-	-	1	1	1
18.	-	-	-	-	-	-	1	6	0
19.	-	-	-	-	-	-	1	2	0
20.	-	-	-	-	-	-	1	2	0
							6	3	1
Average,	-	-	-	-	1	2	1		

2½ BUSHEL S.

In experiment N° 17.	-	-	-	-	-	-	2	1	1
In experiment N° 16.	-	-	-	-	-	-	2	0	3
18.	-	-	-	-	-	-	3	3	0
19.	-	-	-	-	-	-	1	3	0
20.	-	-	-	-	-	-	1	1	0
							7	7	3
Average,	-	-	-	-	1	7	2		

3 BUSHEL S.

In experiment N° 17.	-	-	-	-	-	-	2	4	1
19.	-	-	-	-	-	-	1	4	2
20.	-	-	-	-	-	-	1	4	2
							5	5	1
Average,	-	-	-	-	1	7	0		

3½ BUSHEL S.

In experiment N° 16.	-	-	-	-	-	-	2	0	0
17.	-	-	-	-	-	-	2	3	3
18.	-	-	-	-	-	-	4	0	0
19.	-	-	-	-	-	-	2	0	0
20.	-	-	-	-	-	-	2	0	0
							12	3	3
Average,	-	-	-	-	2	3	3		

G 2

4½ BUSHEL S.

		4½ BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	2	3	1
		5 BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	2	4	0
17.	-	-	-	-	-	2	6	2
18.	-	-	-	-	-	4	1	0
19.	-	-	-	-	-	2	1	0
20.	-	-	-	-	-	2	1	0
						13	5	2
Average,	-	-	-	-	-	2	5	3
		5½ BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	2	6	0
		6 BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	2	6	3
17.	-	-	-	-	-	2	6	3
18.	-	-	-	-	-	2	6	0
19.	-	-	-	-	-	2	0	0
20.	-	-	-	-	-	2	2	0
						12	5	2
Average,	-	-	-	-	-	2	4	1
		6½ BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	2	2	2
19.	-	-	-	-	-	1	1	2
20.	-	-	-	-	-	2	1	2
						5	5	2
Average,	-	-	-	-	-	1	7	0
		7 BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	2	0	3
17.	-	-	-	-	-	2	7	0
18.	-	-	-	-	-	2	1	0
19.	-	-	-	-	-	1	1	0
20.	-	-	-	-	-	1	5	0
						9	6	3
Average,	-	-	-	-	-	1	7	3
		7½ BUSHEL.						
In Experiment N° 16.	-	-	-	-	-	1	4	1
17.	-	-	-	-	-	2	0	1

						Q.	B.	P.
						0	4	2
						1	0	2
						5	1	2
Average,	-	-	-	-	1 2 1			
						8 BUSHEL.		
In Experiment N° 18.	-	-	-	-	-	0	4	0
19.	-	-	-	-	-	0	4	0
20.	-	-	-	-	-	1	0	0
						2	0	0
Average,	-	-	-	-	0 5 1			
						8½ BUSHEL.		
In Experiment N° 17.	-	-	-	-	-	1	3	1
						9 BUSHEL.		
In Experiment N° 17.	-	-	-	-	-	0	6	0
						MANURED.		
Average of 2 pecks,	-	-	-	-	-	1	1	2
1 bushel,	-	-	-	-	-	2	4	1
1½ ditto,	-	-	-	-	-	3	6	2
2 ditto,	-	-	-	-	-	4	2	3
2½ ditto,	-	-	-	-	-	5	5	2
3 ditto,	-	-	-	-	-	6	1	2
3½ ditto,	-	-	-	-	-	3	7	2
4 ditto,	-	-	-	-	-	3	3	1
4½ ditto,	-	-	-	-	-	3	0	1
5 ditto,	-	-	-	-	-	2	4	0
5½ ditto,	-	-	-	-	-	2	3	2
6 ditto,	-	-	-	-	-	2	3	0
6½ ditto,	-	-	-	-	-	1	5	2

Five bushels and an half are evidently more advantageous than any other of the unmanured quantities; and three bushels of the manured ones: the great difference of which quantities is remarkable.

GENERAL RECAPITULATION.

We must, in the next place, draw the averages of these years into one view; that we may command not the result only of separate trials and single seasons, but the general medium of several: to begin with the unmanured.

2 PECKS.

2 PECKS.						
Clear produce in 1764 and 1765,	-	-	-	-	-	0 7 0
1 BUSHEL.						
In 1764 and 1765,	-	-	-	-	-	0 7 1
1½ BUSHEL.						
In 1764 and 1765,	-	-	-	-	-	1 3 2
2 BUSHELS.						
In 1764 and 1765,	-	-	-	-	-	1 4 3
In 1766,	-	-	-	-	-	1 2 1
1767,	-	-	-	-	-	1 2 1
						<hr/>
						4 1 1
Average,	-	-	-	-	1 3 0	
2½ BUSHELS.						
In 1764 and 1765,	-	-	-	-	-	1 7 1
1767,	-	-	-	-	-	2 1 1
						<hr/>
						4 0 2
Average,	-	-	-	-	2 0 1	
3 BUSHELS.						
In 1764 and 1765,	-	-	-	-	-	2 0 3
1766,	-	-	-	-	-	1 3 0
1767,	-	-	-	-	-	1 7 2
						<hr/>
						5 3 1
Average,	-	-	-	-	1 6 1	
3½ BUSHELS.						
In 1764 and 1765,	-	-	-	-	-	2 0 1
1767,	-	-	-	-	-	1 7 0
						<hr/>
						3 7 1
Average,	-	-	-	-	1 7 2	
4 BUSHELS.						
In 1764 and 1765,	-	-	-	-	-	2 4 2
1766,	-	-	-	-	-	1 7 2
1767,	-	-	-	-	-	2 3 3
						<hr/>
						6 7 3
Average,	-	-	-	-	2 1 2	
4½ BUSHELS.						

4 $\frac{1}{2}$ BUSHELS.

In 1764 and 1765,	-	-	-	-	-	2	2	0
1766,	-	-	-	-	-	2	5	1
1767,	-	-	-	-	-	2	3	1
						<hr/>		
						7	2	2
Average,	-	-	-	-	2	3	2	

5 BUSHELS.

In 1764 and 1765,	-	-	-	-	-	2	6	2
1766,	-	-	-	-	-	2	1	3
1767,	-	-	-	-	-	2	5	3
						<hr/>		
						7	6	0
Average,	-	-	-	-	2	5	1	

5 $\frac{1}{2}$ BUSHELS.

In 1764 and 1765,	-	-	-	-	-	2	1	0
1766,	-	-	-	-	-	2	0	2
1767,	-	-	-	-	-	2	6	0
						<hr/>		
						6	7	2
Average,	-	-	-	-	2	2	2	

6 BUSHELS.

In 1764 and 1765,	-	-	-	-	-	2	6	2
1766,	-	-	-	-	-	2	3	1
1767,	-	-	-	-	-	2	4	1
						<hr/>		
						7	6	0
Average,	-	-	-	-	2	4	2	

6 $\frac{1}{2}$ BUSHELS.

In 1764 and 1765,	-	-	-	-	-	2	1	1
1766,	-	-	-	-	-	1	3	2
1767,	-	-	-	-	-	1	7	0
						<hr/>		
						5	3	3
Average,	-	-	-	-	1	6	2	

7 BUSHELS.

7 BUSHEL.

In 1764 and 1765,	-	-	-	-	-	2	2	0
1766,	-	-	-	-	-	2	0	2
1767,	-	-	-	-	-	1	7	3
Average,	-	-	-	-	-	6	2	1

7½ BUSHEL.

In 1764 and 1765,	-	-	-	-	-	2	5	1
1766,	-	-	-	-	-	1	2	0
1767,	-	-	-	-	-	1	2	1
Average,	-	-	-	-	-	5	1	2

8 BUSHEL.

In 1764 and 1765,	-	-	-	-	-	3	0	0
1766,	-	-	-	-	-	0	6	1
1767,	-	-	-	-	-	0	5	1
Average,	-	-	-	-	-	4	3	2

8½ BUSHEL.

In 1767,	-	-	-	-	-	1	3	1
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9 BUSHEL.

In 1766,	-	-	-	-	-	0	7	0
1767,	-	-	-	-	-	0	6	0
Average,	-	-	-	-	-	1	5	0

10 BUSHEL.

In 1764 and 1765,	-	-	-	-	-	2	2	0
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12 BUSHEL.

In 1764 and 1765,	-	-	-	-	-	2	0	0
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Produce

						Q.	B.	P.
Produce of 2 pecks,	-	-	-	-	-	0	7	0
1 bushel,	-	-	-	-	-	0	7	1
1½ ditto,	-	-	-	-	-	1	3	2
2 ditto	-	-	-	-	-	1	3	0
2½ ditto,	-	-	-	-	-	2	0	1
3 ditto,	-	-	-	-	-	1	6	1
3½ ditto,	-	-	-	-	-	1	7	2
4 ditto,	-	-	-	-	-	2	1	2
4½ ditto,	-	-	-	-	-	2	3	2
5 ditto,	-	-	-	-	-	2	5	1
5½ ditto,	-	-	-	-	-	2	2	2
6 ditto,	-	-	-	-	-	2	4	2
6½ ditto,	-	-	-	-	-	1	6	2
7 ditto,	-	-	-	-	-	2	0	3
7½ ditto,	-	-	-	-	-	1	5	3
8 ditto,	-	-	-	-	-	1	3	3
8½ ditto,	-	-	-	-	-	1	3	1
9 ditto,	-	-	-	-	-	0	6	2
10 ditto,	-	-	-	-	-	2	2	0
12 ditto.	-	-	-	-	-	2	0	0

Five bushels the most advantageous quantity. This is somewhat under the idea I had conceived from the separate experiments: but it is more than commonly used by farmers; those of our neighbourhood confine themselves to four: and the writers of husbandry think two more than sufficient. Both may be right on certain soils; but it is clear enough from this table that on clayey and gravelly loams five bushels are more advantageous.

I cannot account for the seeming contradictions in ten and twelve bushels yielding so great a produce, nor for some other variations which are different from the general result; but I think it will, on their account, be proper to divide the table as under:

						Q.	B.	P.
Average product from two bushels and under,	-	-	-	-	-	1	1	0
Ditto from two to four inclusive,	-	-	-	-	-	1	7	3
Ditto from four to six inclusive,	-	-	-	-	-	2	3	3
Above six,	-	-	-	-	-	1	5	3

This division renders the table extremely satisfactory. The first average may be called that of the modern writers on husbandry. The second that of the farmer's practice; and the third the quantity which these experiments prove to be most advantageous. We must, in the next place, state the averages of the manured trials.

									Q.	B.	P.
2 pecks,	-	-	-	-	-	-	-	-	1	1	2
1 bushel,	-	-	-	-	-	-	-	-	2	4	1
1½ bushel,	-	-	-	-	-	-	-	-	3	6	2
2 ditto,	-	-	-	-	-	-	-	-	4	2	3
2½ ditto,	-	-	-	-	-	-	-	-	5	5	2
3 ditto,	-	-	-	-	-	-	-	-	6	1	2
3½ ditto,	-	-	-	-	-	-	-	-	3	7	2
4 ditto,	-	-	-	-	-	-	-	-	3	3	1
4½ ditto,	-	-	-	-	-	-	-	-	3	0	1
5 ditto,	-	-	-	-	-	-	-	-	2	4	0
5½ ditto,	-	-	-	-	-	-	-	-	2	3	2
6 ditto,	-	-	-	-	-	-	-	-	2	3	0
6½ ditto,	-	-	-	-	-	-	-	-	1	5	2

In these three bushels are much more advantageous than any of the rest. This quantity is lower than what is used in common practice; which is very contrary to the result of the former table. Now this difference strongly points out the variation occasioned by manuring, and demands a particular attention: for it is not the mere number of loads of dung that comes into the question alone, but all those varieties of natural fertility which answer to the artificial ones from manuring; consequently a farmer should proportion the quantity of seed to the goodness of his land, and not, as is common, sow the same on all sorts of soil, and in all states; which conduct is here clearly proved to be attended with a regular and constant loss.

What those authors will say to me, who have been so very profuse in their arguments for small quantities of seed, I know not; nor, indeed, am I very solicitous about the matter. Variations of soil and circumstances require great variations of conduct; but without even allowing such a circumstance, what dependence can I place in all the volume of reasoning, conjectures, and fancies, with which husbandry has been deluged? Consult all the folios that are every day publishing, will you find in one of them a determination from experiment of the proper quantity of seed for an acre of land in the broad-cast method of sowing? And I must be allowed to add, that I have too much experience myself ever to suffer reasoning in matters of husbandry to be my guide in opposition to experiment.

P A R T II.

Of the Quantity of BARLEY-SEED in the New Method.

THE trials I have made under this head are numerous ; but I shall select only some of the most decisive, as the general effect of them all has been very similar. It is not a point of such consequence as I apprehended it to be in the beginning of my practice : for when drilling the grain is in general found to be so extremely unprofitable, it would be ridiculous to dwell minutely on the quantities of seed most proper. These experiments, therefore, I dedicate chiefly to the use of those gentlemen who are desirous of satisfying themselves, by their own practice, of the merit of the drill culture ;—that they may not uselessly spend much time in discovering what quantities they should drill.

EXPERIMENT N^o I.

In April 1764, marked 20 square perches of fallow, in field L*, and drilled them in the following manner : the soil perfectly alike, and the contiguity no otherwise broken than was necessary for the difference between horse-hoed and hand-hoed crops.

- N^o 1. With $\frac{1}{5}$ of a pint, in equally distant rows, 6 inches asunder. This is 2 pecks *per* acre.
2. With ditto in ditto, 1 foot.
 3. With ditto in ditto, 18 inches.
 4. With ditto in ditto, 2 feet.
 5. With ditto in ditto, 3 feet.
 6. With $\frac{2}{5}$ of a pint, in equally distant rows, 6 inches asunder. This is 1 bushel *per* acre.
 7. With ditto in ditto, 1 foot.
 8. With ditto in ditto, 18 inches.
 9. With ditto in ditto, 2 feet.
 10. With ditto in ditto, 3 feet.
 11. With $\frac{3}{5}$ of a pint, in equally distant rows, 6 inches asunder : 1 $\frac{1}{2}$ bushel *per* acre.
 12. With ditto in ditto, 1 foot.
 13. With ditto in ditto, 18 inches.
 14. With ditto in ditto, 2 feet.
 15. With ditto in ditto, 3 feet.
 16. With $\frac{4}{5}$ of a pint, in equally distant rows, 6 inches asunder. Two bushels *per* acre.

17. With ditto in ditto, 1 foot.
 18. With ditto in ditto, 18 inches.
 19. With ditto in ditto, 2 feet.
 20. With ditto in ditto, 3 feet.

The six, twelve, and eighteen inches, and two feet intervals, were all hand-hoed at the same time; the three feet horse-hoed. The produce:

		P. Q. P.			Q. B. P.		
N ^o 1.	Produce,	-	0	2	0	or per acre	- - -
	Seed per acre,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	2. Produce,	-	0	2	1	-	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	3. Produce,	-	0	2	0	-	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	4. Produce,	-	0	1	1 $\frac{1}{2}$	-	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	5. Produce,	-	0	1	0	-	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	6. Produce,	-	0	2	1	-	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	7. Produce,	-	0	2	1 $\frac{1}{2}$	-	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-

8. Produce,

Chap. II.

B A R L E Y.

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			P.	Q.	P.				Q.	B.	P.
8. Produce,	-	-	0	2	1 $\frac{1}{2}$	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	1	4	3
9. Produce,	-	-	0	2	1	-	-	-	1	4	2
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	1	3	2
10. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	1	1	0
11. Produce,	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	1	5	2
12. Produce,	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	1	5	2
13. Produce,	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	1	5	2
14. Produce,	-	-	0	2	1 $\frac{1}{2}$	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	1	4	1
15. Produce,	-	-	0	2	1	-	-	-	1	4	2
Seed,	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	1	3	0

16. Produce,

			P.	Q.	P.			Q.	B.	P.
16. Produce,	-	-	0	3	1	-	-	2	1	2
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	7	2
17. Produce,	-	-	0	3	1½	-	-	2	2	3
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	2	0	3
18. Produce,	-	-	0	3	1	-	-	2	1	2
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	7	2
19. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	5	0
20. Produce,	-	-	0	2	0½	-	-	1	3	1
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	1	1

OBSERVATIONS.

This experiment is vastly more regular, clear, and decisive, than many in husbandry: let them be made with all possible attention. The larger the quantity of seed, the greater the produce, and that with surprizing regularity in every mode of sowing. In one respect, however, this trial is not so conclusive as I wish; which is in the want of extent: for the quantities not extending beyond two bushels, do not leave it clear that a larger portion of seed might be more beneficial in some or all of these distances. It is too late for remedying this omission this year; but in future ones I shall attend to so important a point.

EXPERIMENT N° 2.

In April 1764, marked 20 square perches of fallow, in field M*, and drilled them in the following manner: the soil perfectly alike in all.

N° 1.

N^o 1. With $\frac{1}{5}$ of a pint of barley, in equally distant rows, 6 inches afunder. This is two-pecks *per* acre.

2. With ditto in ditto, 1 foot.
3. With ditto in ditto, 18 inches.
4. With ditto in ditto, 2 feet.
5. With ditto in double rows, 1 foot, with 4 feet intervals.
6. With $\frac{2}{5}$ of a pint, in equally distant rows, 6 inches: one bushel *per* acre.
7. With ditto in ditto, 1 foot.
8. With ditto in ditto, 18 inches.
9. With ditto in ditto, 2 feet.
10. With ditto in double rows, 1 foot, with 4 feet intervals.
11. With $\frac{3}{5}$ of a pint, in equally distant rows, 6 inches: $1\frac{1}{2}$ bushel *per* acre.
12. With ditto in ditto, 1 foot.
13. With ditto in ditto, 18 inches.
14. With ditto in ditto, 2 feet.
15. With ditto in double rows, 1 foot, with 4 feet intervals.
16. With $\frac{4}{5}$ of a pint, in equally distant rows, 6 inches afunder: 2 bushels *per* acre.
17. With ditto in ditto, 1 foot.
18. With ditto in ditto, 18 inches.
19. With ditto in ditto, 2 feet.
20. With ditto in double rows, 1 foot, with 4 feet intervals.

All drilled on the flat, were hand-hoed equally and at the same time; the double rows with intervals both hand and horse-hoed in the common manner. All other articles of culture and management the same. The produce, &c. as follows:

			P.	Q.	P.			Q.	B.	P.
N ^o 1. Produce,	-	-	0	1	$0\frac{1}{2}$	or <i>per</i> acre	-	0	6	1
Seed,	-	-		-		-	-	0	0	2
Clear produce,	-	-		-		-	-	0	5	3
2. Produce,	-	-	0	1	$0\frac{1}{2}$		-	0	6	1
Seed,	-	-		-		-	-	0	0	2
Clear produce,	-	-		-		-	-	0	5	3

3. Produce,

				P.	Q.	P.			Q.	B.	P.
3. Produce,	-	-	-	0	1	0	-	-	0	5	0
Seed,	-	-	-	-	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	-	-	-	-	0	4	2
4. Produce,	-	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	-	-	-	-	0	7	0
5. Produce,	-	-	-	0	0	1	-	-	0	2	2
Seed,	-	-	-	-	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	-	-	-	-	0	2	0
6. Produce,	-	-	-	0	2	0	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	1	1	0
7. Produce,	-	-	-	0	1	1 $\frac{1}{2}$	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	0	7	3
8. Produce,	-	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	0	6	2
9. Produce,	-	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	0	6	2
10. Produce,	-	-	-	0	1	0	-	-	0	5	0
Seed,	-	-	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	-	-	0	4	0

11. Produce,

Chap. II.

B A R L E Y.

65

			P.	Q.	P.			Q.	B.	P.
11. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	1	5	2
12. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	1	5	2
13. Produce,	-	-	0	3	$0\frac{1}{2}$	-	-	2	0	1
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	1	6	3
14. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	1	5	2
15. Produce,	-	-	0	2	$1\frac{1}{2}$	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	1	4	1
16. Produce,	-	-	0	3	$0\frac{1}{2}$	-	-	2	1	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	6	1
17. Produce,	-	-	0	3	1	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	2	2	0
18. Produce	-	-	0	3	1	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	2	2	0

VOL. I.

I

19. Produce,

			P.	Q.	P.			Q.	B.	P.
19. Produce,	-	-	0	3	0 $\frac{1}{2}$	-	-	2	0	1
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	6	1
20. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	1	5	0

OBSERVATIONS.

If the several portions of seed in this experiment be examined throughout each mode of sowing, there will appear several contradictions: but I am not able to account for them; nor do I apprehend that any former experimenters have often met with a general and particular uniformity: in the result of a trial at large, and in every part, I should suppose that most experiments would vary. In this before me, the largest quantity of seed (2 bushels) is most advantageous in every mode of sowing; but herein it is not so explicit as I could wish: for the portions of seed not being extended beyond two bushels, we cannot determine whether a larger quantity would not have been yet more beneficial. But this error in the want of extent shall be made up in future trials.

EXPERIMENT N^o 4.

Marked 20 perches of fallow in field L*, the middle of March 1765, and drilled them with barley, in the following manner: the similarity of soil perfect.

N^o 1. With $\frac{3}{5}$ of a pint, in equally distant rows, 6 inches asunder.
This is $1\frac{1}{2}$ bushel *per* acre.

2. With ditto in ditto, 1 foot.

3. With ditto in ditto, 2 feet.

4. With ditto in double rows, 1 foot asunder, with 4 feet intervals.

5. With ditto in 3 rows, 1 foot asunder, with 4-feet intervals.

6. With $\frac{4}{5}$ of a pint, in equally distant rows, 6 inches asunder: 2 bushels *per* acre.

7. With ditto in ditto, 1 foot.

8. With ditto in ditto, 2 feet.

9. With ditto in double rows, 1 foot asunder, with 4 feet intervals.

10. With

10. With ditto in 3 rows, 1 foot asunder, with 4 feet intervals.
11. With 1 pint in equally distant rows, 6 inches asunder : $2\frac{1}{2}$ bushels per acre.
12. With ditto in ditto, 1 foot.
13. With ditto in ditto, 2 feet.
14. With ditto in double rows, 1 foot asunder, with 4 feet intervals.
15. With ditto in treble rows, at 1 foot, with 4 feet intervals.
16. With 1 pint and $\frac{1}{5}$ in equally distant rows, 6 inches, 3 bushels per acre.
17. With ditto in ditto, 1 foot.
18. With ditto in ditto, 2 feet.
19. With ditto in double rows, 1 foot asunder, with 4 feet intervals.
20. With ditto in treble rows, 1 foot, with 4 feet intervals.

The equally distant rows were regularly and equally hand-hoed; and the drills with intervals, both horse and hand-hoed: all operations being performed at the same time, and in every respect similar. The produce, &c. as follows:

		P. 2. P.					2. B. P.			
N ^o 1. Produce,	-	-	0	2	1	or per acre	-	1	4	2
Seed,	-	-	-	-	-	-	-	0	1	2
								<hr/>		
Clear produce,	-	-	-	-	-	-	-	1	3	0
								<hr/>		
2. Produce,	-	-	0	2	1	-	-	1	4	2
Seed.	-	-	-	-	-	-	-	0	1	2
								<hr/>		
Clear produce,	-	-	-	-	-	-	-	1	3	0
								<hr/>		
3. Produce,	-	-	0	2	1½	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	0	1	2
								<hr/>		
Clear produce,	-	-	-	-	-	-	-	1	4	1
								<hr/>		
4. Produce,	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	0	1	2
								<hr/>		
Clear produce,	-	-	-	-	-	-	-	0	6	0
								<hr/>		
5. Produce,	-	-	0	2	0	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	0	1	2
								<hr/>		
Clear produce,	-	-	-	-	-	-	-	1	0	2
								<hr/>		
								6. Produce,		
								1 2		

G R A I N.

Book I.

			P.	Q.	P.				Q.	B.	P.
6. Produce,	-	-	0	2	1	-	-	-	1	4	2
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	1	2	2
7. Produce,	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	1	5	0
8. Produce,	-	-	0	3	1	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	1	7	2
9. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear Produce,	-	-	-	-	-	-	-	-	1	0	0
10. Produce,	-	-	0	2	1 $\frac{1}{2}$	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	1	3	3
11. Produce,	-	-	0	4	0	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	2	1	2
12. Produce,	-	-	0	4	0 $\frac{1}{2}$	-	-	-	2	5	1
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	2	2	3
13. Produce,	-	-	0	3	1 $\frac{1}{2}$	-	-	-	2	2	3
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	2	0	1

14. Produce,

				P.	Q.	P.				Q.	B.	P.
14. Produce,	-	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	-	1	4	2
15. Produce,	-	-	-	0	3	1 $\frac{1}{2}$	-	-	-	2	2	3
Seed,	-	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	-	2	0	1
16. Produce,	-	-	-	0	4	0 $\frac{1}{2}$	-	-	-	2	5	1
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	2	1
17. Produce,	-	-	-	0	4	1	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	2	3	2
18. Produce,	-	-	-	0	3	1 $\frac{1}{2}$	-	-	-	2	2	3
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	7	3
19. Produce,	-	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear Produce,	-	-	-	-	-	-	-	-	-	1	4	0
20. Produce,	-	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	4	0

OBSERVATIONS.

This trial is by no means satisfactory in the whole progress of the variations. There are contradictions in every part of it: but yet we learn some important truths from it, that must not be neglected. Two bushels and an half of seed appear clearly to be the most advantageous quantities for drilling, with intervals for horse-hoeing; more beneficial than

than three bushels. In the other modes the success is divided, but inclines most to three bushels: the smaller quantities are evidently insufficient in all methods. These general tendencies of trials are more satisfactory than the minute particulars, which will not, in an experiment of many parts, be uniform throughout, or even in three together; nor is such uniformity ever to be expected.

EXPERIMENT N° 5.

Marked 20 perches of fallow, in field M*, the beginning of March 1765, the soil perfectly the same, and drilled them in the following manner:

- N° 1. With $\frac{4}{5}$ of a pint, in equally distant rows, 6 inches asunder. This is 2 bushels *per* acre.
2. With ditto in ditto, 1 foot.
3. With ditto in ditto, 2 feet.
4. With ditto in double rows, 1 foot asunder, with 4 feet intervals.
5. With ditto in treble rows, 1 foot, with 4 feet intervals.
6. With 1 pint in equally distant rows, 6 inches asunder: $2\frac{1}{2}$ bushels *per* acre.
7. With ditto in ditto, 1 foot.
8. With ditto in ditto, 2 feet.
9. With ditto in double rows, 1 foot, with 4 feet intervals.
10. With ditto in treble rows, 1 foot, with 4 feet intervals.
11. With 1 pint and $\frac{1}{5}$ in equally distant rows, 6 inches: 3 bushels *per* acre.
12. With ditto in ditto, 1 foot.
13. With ditto in ditto, 2 feet.
14. With ditto in double rows, 1 foot, with 4 feet intervals.
15. With ditto in treble rows, 1 foot, with 4 feet intervals.
16. With 1 pint and $\frac{2}{5}$ in equally distant rows, 6 inches: $3\frac{1}{2}$ bushels *per* acre.
17. With ditto in ditto, 1 foot.
18. With ditto in ditto, 2 feet.
19. With ditto in double rows, 1 foot, with 4 feet intervals.
20. With ditto in treble rows, 1 foot, with 4 feet intervals.

The hand-hoeing was regularly given to all those drilled equally distant, and both horse and hand-hoeing to the others. The rest of the management was in every respect similar. The produce, &c. as follows:

N° 1.

						P. Q. P.		
						Q. B. P.		
N ^o 1. Produce,	-	-	-	0	2	0	or per acre	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
2. Produce,	-	-	-	0	2	1 $\frac{1}{2}$	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
3. Produce,	-	-	-	0	2	1 $\frac{1}{2}$	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
4. Produce,	-	-	-	0	2	1	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
5. Produce,	-	-	-	0	3	0	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
6. Produce,	-	-	-	0	3	1 $\frac{1}{2}$	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
7. Produce,	-	-	-	0	4	0	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-
8. Produce,	-	-	-	0	3	1	-	-
Seed,	-	-	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-	-	-

9. Produce,

		R. 2 R.		Q. B. P.	
9. Produce,	- - - - -	10	43	0	7 0
Seed,	- - - - -	-	-	-	2 2
Clear produce,	- - - - -	-	-	-	1 4 2
10. Produce,	- - - - -	10	43	1	2 1 2
Seed,	- - - - -	-	-	-	2 2
Clear produce,	- - - - -	-	-	-	1 7 0
11. Produce,	- - - - -	10	4	0	2 4 0
Seed,	- - - - -	-	-	-	3 0
Clear produce,	- - - - -	-	-	-	2 1 0
12. Produce,	- - - - -	10	4	1	2 6 2
Seed,	- - - - -	-	-	-	3 0
Clear produce,	- - - - -	-	-	-	2 3 2
13. Produce,	- - - - -	0	4	0	2 4 0
Seed,	- - - - -	-	-	-	0 3 0
Clear produce,	- - - - -	-	-	-	2 1 0
14. Produce,	- - - - -	0	3	1	2 2 3
Seed,	- - - - -	-	-	-	0 3 0
Clear produce,	- - - - -	-	-	-	1 7 3
15. Produce,	- - - - -	0	4	0	2 4 0
Seed,	- - - - -	-	-	-	0 3 0
Clear produce,	- - - - -	-	-	-	2 1 0
16. Produce,	- - - - -	0	4	0	2 5 1
Seed,	- - - - -	-	-	-	0 3 2
Clear produce,	- - - - -	-	-	-	2 1 3
17. Produce,	- - - - -	-	-	-	-

			P.	Q.	P.			Q.	B.	P.
17. Produce,	-	-	0	4	1	-	-	2	6	2
Seed,	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	2	3	0
18. Produce,	-	-	0	4	0	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	2	0	2
19. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	1	3	2
20. Produce,	-	-	0	3	0	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	1	3	2

OBSERVATIONS.

This experiment, upon the whole, is more uniform in the result than might be expected from so many divisions. It does not, however, agree with the preceding ones in the general quantity of seed that is most advantageous. Three bushels are here the best portion; which is something above that of former trials. Three and an half being so much inferior in the horse-hoeing way, prove that quantity to be too great; but in the equally distant rows the contrary is the case. This is quite consistent with reason; for the same quantity cannot well be conceived to answer equally in modes so very different.

EXPERIMENT N° 6.

Marked 20 square perches of turnep-land, in field L*, that had been fed off with sheep, and sowed them, the middle of April 1766, in the following manner:

N° 1. With $\frac{3}{5}$ of a pint in equally distant rows, 1 foot asunder, $1\frac{1}{2}$ bushel per acre.

2. With ditto in ditto, 2 feet.

3. With ditto in double rows, 1 foot, with 3 feet intervals.

4. With ditto in double rows, 1 foot, with 4 feet intervals.
5. With ditto in treble rows, 1 foot, with 4 feet intervals.
6. With $\frac{4}{5}$ pint in equally distant rows, 1 foot asunder, 2 bushels *per* acre.
7. With ditto in ditto, 2 feet.
8. With ditto in double rows, 1 foot, with 3 feet intervals.
9. With ditto in double rows, 1 foot, with 4 feet intervals.
10. With ditto in treble rows, 1 foot, with 4 feet intervals.
11. With 1 pint in equally distant rows, 1 foot asunder, 2 bushels and $\frac{1}{2}$ *per* acre.
12. With ditto in ditto, 2 feet.
13. With ditto in double rows, 1 foot, with 3 feet intervals.
14. With ditto in double rows, 1 foot, with 4 feet intervals.
15. With ditto in treble rows, 1 foot, with 4 feet intervals.
16. With 1 pint and $\frac{1}{5}$ in equally distant rows, 1 foot asunder, 3 bushels *per* acre.
17. With ditto in ditto, 2 feet.
18. With ditto in double rows, 1 foot, with 3 feet intervals.
19. With ditto in double rows, 1 foot, with 4 feet intervals.
20. With ditto in treble rows, 1 foot, with 4 feet intervals.

The equally distant rows were regularly and equally hand-hoed, and the others both horse and hand-hoed: all other circumstances of management were perfectly similar. The produce, &c. as follows:

		P. 2. P.			2. B. P.		
No. 1. Produce,		-	-	0 2 0	or <i>per</i> acre		
Seed,		-	-	-	-	-	-
Clear produce,		-	-	-	-	1 0 2	
2. Produce,		-	-	0 2 0 $\frac{1}{2}$	-	1 3 3	
Seed,		-	-	-	-	0 1 2	
Clear produce,		-	-	-	-	1 2 1	
3. Produce,		-	-	0 1 1	-	0 7 2	
Seed,		-	-	-	-	0 1 2	
Clear produce,		-	-	-	-	0 6 0	

4. Produce,

		P.	Q.	P.	Q.	B.	P.
4. Produce,	-	0	1	0	1	6	1
Seed,	-	-	-	-	-	1	2
Clear produce,	-	-	-	-	-	4	3
5. Produce,	-	0	2	0	1	2	0
Seed,	-	-	-	-	-	1	2
Clear produce,	-	-	-	-	-	0	2
6. Produce,	-	0	3	0	1	7	0
Seed,	-	-	-	-	-	2	0
Clear produce,	-	-	-	-	-	5	0
7. Produce,	-	0	3	0	2	0	1
Seed,	-	-	-	-	-	2	0
Clear produce,	-	-	-	-	-	6	1
8. Produce,	-	0	2	0	1	2	0
Seed,	-	-	-	-	-	2	0
Clear produce,	-	-	-	-	-	0	0
9. Produce,	-	0	2	1	1	5	3
Seed,	-	-	-	-	-	2	0
Clear produce,	-	-	-	-	-	3	3
10. Produce,	-	0	2	1	1	5	3
Seed,	-	-	-	-	-	2	0
Clear produce,	-	-	-	-	-	3	3
11. Produce,	-	0	3	1	2	1	2
Seed,	-	-	-	-	-	2	2
Clear produce,	-	-	-	-	-	7	0

P. 2. P.

2. B. P.

12. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	1	4	2
13. Produce,	-	-	-	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	0	7	2
14. Produce,	-	-	-	-	-	-	1	4	2
Seed,	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	1	2	0
15. Produce,	-	-	-	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	1	3	1
16. Produce,	-	-	-	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	6	2
17. Produce,	-	-	-	-	-	-	2	0	1
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	5	1
18. Produce,	-	-	-	-	-	-	1	0	1
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	0	5	1
19. Produce,	-	-	-	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	0	7	0
20. Produce,	-	-	-	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	2	3

OBSERVATIONS.

OBSERVATIONS.

The quantity of seed most advantageous in the horse hoeing culture is here pretty clearly decided to be two bushels, which, in all three modes of 2 rows with 3 feet intervals; 2 with 4 feet ones, and 3 with 4 feet ones, are superior to both larger and smaller quantities. This is a point of some importance, for as the clear produce declines with the increase of seed, the proof is quite satisfactory: I am sensible that two bushels are a very different portion to what is recommended by most writers on the new husbandry. It is not however, my purport to aim at reconciling these experiments, with the ideas of every author that has published: It is sufficient for me to state my experience, and the ground whereon I build it. In the other parts of this experiment the result varies a good deal; but upon the whole, the larger quantities of seed appear to be more advantageous than the less, with some exceptions however, but not of much consequence.

EXPERIMENT N^o 7.

Marked in field M*, 24 perches of potatoe land, and drilled them the middle of April 1766, in the following manner:

N^o 1. With $\frac{3}{5}$ of a pint in equally distant rows, 1 foot asunder, $1\frac{1}{2}$ bushel per acre.

2. With ditto in ditto, 2 feet.

3. With ditto in double rows, 1 foot, with 3 feet intervals.

4. With ditto in double rows, 1 foot, with 4 feet intervals.

5. With ditto in treble rows, 1 foot, with 3 feet intervals.

6. With ditto in treble rows, 1 foot, with 4 feet intervals.

7. With $\frac{4}{5}$ of a pint in equally distant rows, 1 foot asunder, 2 bushels per acre.

8. With ditto in ditto, 2 feet.

9. With ditto in double rows, 1 foot, with 3 feet intervals.

10. With ditto in double rows, 1 foot, with 4 feet intervals.

11. With ditto in treble rows, 1 foot, with 3 feet intervals.

12. With ditto in ditto, 4 feet intervals.

13. With 1 pint in equally distant rows, 1 foot asunder, 2 bushels per acre.

14. With ditto in ditto, 2 feet.

15. With ditto in double rows, 1 foot, with 3 feet intervals.

16. With ditto in ditto, with 4 feet intervals.

17. With ditto in treble rows, 1 foot, with 3 feet intervals.

18. With ditto in ditto, with 4 feet intervals.

19. With

19. With $1\frac{1}{2}$ pint in equally distant rows, 1 foot asunder, 3 bushels per acre.

20. With ditto in ditto, 2 feet.

21. With ditto in double rows, 1 foot, with 3 feet intervals.

22. With ditto in ditto, with 4 feet intervals.

23. With ditto in treble rows, 1 foot, with 3 feet intervals.

24. With ditto in ditto, with 4 feet intervals.

The hand hoeing of the whole was performed always at the same time, and the horse hoeing of those with intervals. The rest of the management perfectly similar: the produce as follows,

				P. 2. P.		2. B. P.				
N ^o . 1. Produce,	-	-	0	1	1½	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	0	7	1
2. Produce,	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	0	6	0
3. Produce,	-	-	0	1	0	-	-	0	5	0
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	0	3	2
4. Produce,	-	-	0	1	0	-	-	0	5	0
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	0	3	2
5. Produce,	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	0	6	0
6. Produce,	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	0	6	0

7. Produce,

	P.	Q.	P.	Q.	B.	P.
7. Produce,	-	-	-	0	2	1½
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
8. Produce,	-	-	-	0	2	1
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
9. Produce,	-	-	-	0	2	0
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
10. Produce,	-	-	-	0	2	0
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
11. Produce,	-	-	-	0	2	1
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
12. Produce,	-	-	-	0	2	0½
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
13. Produce,	-	-	-	0	3	1
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
14. Produce,	-	-	-	0	2	1½
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
15. Produce,	-	-	-	0	2	0
Seed,	-	-	-	-	-	-
Clear produce,	-	-	-	-	-	-
16. Produce,	-	-	-	-	-	-

			P.	Q.	P.			Q.	B.	P.
16. Produce,	-	-	0	2	0	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	0	7	2
17. Produce,	-	-	0	2	1	-	-	1	4	2
Seed,	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	1	2	0
18. Produce,	-	-	0	2	1 $\frac{1}{2}$	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	1	3	1
19. Produce,	-	-	0	3	1	-	-	2	1	2
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	1	6	2
20. Produce,	-	-	0	4	0	-	-	2	4	0
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	2	1	0
21. Produce,	-	-	0	1	1	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	0	4	2
22. Produce,	-	-	0	1	1 $\frac{1}{2}$	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	0	5	3
23. Produce,	-	-	0	2	0	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	0	7	0
24. Produce,	-	-	0	2	0 $\frac{1}{2}$	-	-	1	3	1
Seed,	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	1	0	1

OBSERVATIONS.

OBSERVATIONS.

There is a variation in the result of this trial, that is particularly deserving of attention. Two bushels *per* acre are the most advantageous quantity for double rows with intervals; and two bushels and two pecks, the best for treble rows with intervals: this is perfectly consistent with reason: three bushels for the equally distant are more beneficial than the smaller quantities. As to the parts of the experiment which do not agree with these decisions, they do not amount to a contradiction of them; and must be considered as slight variations, which will ever be found in such complicated trials as those of 24 divisions.

EXPERIMENT N° 8.

In March 1767, marked 24 square perches of turnep-land in field L*, and sowed them as follow,

N° 1. With $\frac{4}{5}$ of a pint in equally distant rows, 1 foot asunder, 2 bushels *per* acre.

2. With ditto in ditto, 2 feet.

3. With ditto in double rows, 1 foot, with 3 feet intervals.

4. With ditto in ditto, with 4 feet intervals.

5. With ditto in treble rows, at 1 foot, with 3 feet intervals.

6. With ditto in ditto, with 4 feet intervals.

7. With 1 pint, in equally distant rows, 1 foot asunder, $2\frac{1}{2}$ bushels *per* acre.

8. With ditto in ditto, 2 feet.

9. With ditto in double rows, at 1 foot, with 3 feet intervals.

10. With ditto in ditto, with 4 feet intervals.

11. With ditto in treble rows, at 1 foot, with 3 feet intervals.

12. With ditto in ditto, with 4 feet intervals.

13. With 1 pint, and $\frac{1}{5}$ in equally distant rows, 1 foot asunder, 3 bushels *per* acre.

14. With ditto in ditto, 2 feet.

15. With ditto in double rows, at 1 foot, with 3 feet intervals.

16. With ditto in ditto, with 4 feet intervals.

17. With ditto in treble rows, at 1 foot, with 3 feet intervals.

18. With ditto in ditto, with 4 feet intervals.

19. With $1\frac{2}{5}$ pint, in equally distant rows, at 1 foot asunder: $3\frac{1}{2}$ bushels *per* acre.

20. With ditto in ditto, 2 feet.

21. With ditto in double rows, 1 foot, with 3 feet intervals.

22. With ditto in ditto, with 4 feet intervals.

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23. With

23. With ditto in treble rows, at 1 foot, with 3 feet intervals.

24. With ditto in ditto, with 4 feet intervals.

The hand-hoeing, &c. to the equally distant rows, was regularly performed; and the horse-hoeing to the others: all other circumstances perfectly equal to all: the produce as follows,

P. Q. P.										Q. B. P.		
N° 1.	Produce,	-	0	2	1	or per acre	-	-	-	1	4	2
	Seed,	-	-	-	-	-	-	-	-	0	2	0
	Clear produce,	-	-	-	-	-	-	-	-	1	2	2
2.	Produce,	-	0	2	0	-	-	-	-	1	2	0
	Seed,	-	-	-	-	-	-	-	-	0	2	0
	Clear produce,	-	-	-	-	-	-	-	-	1	0	0
3.	Produce,	-	0	1	1½	-	-	-	-	1	0	3
	Seed,	-	-	-	-	-	-	-	-	0	2	0
	Clear produce,	-	-	-	-	-	-	-	-	0	6	3
4.	Produce,	-	0	1	1½	-	-	-	-	1	0	3
	Seed,	-	-	-	-	-	-	-	-	0	2	0
	Clear produce,	-	-	-	-	-	-	-	-	0	6	3
5.	Produce,	-	0	2	0	-	-	-	-	1	2	0
	Seed,	-	-	-	-	-	-	-	-	0	2	0
	Clear produce,	-	-	-	-	-	-	-	-	1	0	0
6.	Produce,	-	0	2	0½	-	-	-	-	1	3	1
	Seed,	-	-	-	-	-	-	-	-	0	2	0
	Clear produce,	-	-	-	-	-	-	-	-	1	1	1
7.	Produce,	-	0	3	0	-	-	-	-	1	7	0
	Seed,	-	-	-	-	-	-	-	-	0	2	2
	Clear produce,	-	-	-	-	-	-	-	-	1	4	2

8. Produce,

			P.	Q.	P.				Q.	B.	P.
8. Produce,	-	-	0	3	0 $\frac{1}{2}$	-	-	-	2	0	1
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	1	5	3
9. Produce,	-	-	0	2	0 $\frac{1}{2}$	-	-	-	1	3	1
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	1	0	3
10. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	0	7	2
11. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	0	7	2
12. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	1	0	2
13. Produce,	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	1	4	0
14. Produce,	-	-	0	3	0 $\frac{1}{2}$	-	-	-	2	0	1
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	1	5	1
15. Produce,	-	-	0	1	1	-	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	0	4	2
16. Produce,	-	-	0	1	1 $\frac{1}{2}$	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	0	5	3

			P.	Q.	P.				Q.	B.	P.
17. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	0	7	0
18. Produce,	-	-	0	2	0 $\frac{1}{2}$	-	-	-	1	3	1
Seed,	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	1	0	1
19. Produce,	-	-	0	3	0	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	1	3	2
20. Produce,	-	-	0	3	1	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	1	6	0
21. Produce,	-	-	0	1	1	-	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	0	4	0
22. Produce,	-	-	0	1	0 $\frac{1}{2}$	-	-	-	0	6	1
Seed,	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	0	2	3
23. Produce,	-	-	0	1	1 $\frac{1}{2}$	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	0	5	1
24. Produce,	-	-	0	1	1	-	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	0	4	0

OBSERVATIONS.

OBSERVATIONS.

Two bushels are more advantageous in the horse-hoed perches than any other quantity; which agrees with the result of former trials. In the equally distant rows the case is different; three and three and an half are in them superior. These variations are perfectly consistent with reason: but in several divisions of this experiment there are some contradictions, which it would be weak to endeavour to account for; and, as I have often remarked, such may fairly be expected in a trial of twenty-four divisions.

EXPERIMENT N° 9.

At the same time as the preceding experiment, marked 24 perches of potatoe-land in field M*, and sowed them in the following manner:

- N° 1. With $\frac{3}{5}$ of a pint in equally distant rows, 1 foot asunder, $1\frac{1}{2}$ bushel per acre.
2. With ditto in ditto, 2 feet.
3. With ditto in double rows, 1 foot, with 3 feet intervals.
4. With ditto in ditto, with 4 feet intervals.
5. With ditto in treble rows, 1 foot, with 3 feet intervals.
6. With ditto in ditto, with 4 feet intervals.
7. With $\frac{4}{5}$ of a pint, in equally distant rows, 1 foot asunder, 2 bushels per acre.
8. With ditto in ditto, 2 feet.
9. With ditto in double rows, 1 foot, with 3 feet intervals.
10. With ditto in ditto, with 4 feet intervals.
11. With ditto in treble rows, with 3 feet intervals.
12. With ditto in ditto, with 4 feet intervals.
13. With 1 pint in equally distant rows, 1 foot asunder, $2\frac{1}{2}$ bushels per acre.
14. With ditto in ditto, 2 feet.
15. With ditto in double rows, 1 foot, with 3 feet intervals.
16. With ditto in ditto, with 4 feet intervals.
17. With ditto in treble rows, 1 foot, with 3 feet intervals.
18. With ditto in ditto, with 4 feet intervals.
19. With 1 pint and $\frac{1}{5}$ in equally distant rows, 1 foot asunder, 3 bushels per acre.
20. With ditto in ditto, 2 feet.
21. With ditto in double rows, 1 foot asunder, with 3 feet intervals.
22. With ditto in double rows, 1 foot, with 4 feet intervals.
23. With ditto in treble rows, 1 foot, with 3 feet intervals.
24. With ditto in ditto, with 4 feet intervals.

The

The hand-hoeings were given on the same days to all, and the horse-hoeings the same to those with intervals. All other articles of culture were likewise perfectly similar. The produce as follows:

		P.	Q.	P.	Q.	B.	P.
N ^o 1.	Produce,	-	-	0	1	1	or per acre
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	2. Produce,	-	-	0	1	0 $\frac{1}{2}$	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	3. Produce,	-	-	0	1	0 $\frac{1}{2}$	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	4. Produce,	-	-	0	1	0	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	5. Produce,	-	-	0	1	1	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	6. Produce,	-	-	0	1	1 $\frac{1}{2}$	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	7. Produce,	-	-	0	2	1	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-
	8. Produce,	-	-	0	2	0 $\frac{1}{2}$	-
	Seed,	-	-	-	-	-	-
	Clear produce,	-	-	-	-	-	-

9. Produce,

			P.	Q.	P.				Q.	B.	P.
9. Produce,	-	-	0	1	1 $\frac{1}{2}$	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	0	6	3
10. Produce,	-	-	0	1	1	-	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	0	5	2
11. Produce,	-	-	0	1	1 $\frac{1}{2}$	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	0	6	3
12. Produce,	-	-	0	2	0	-	-	-	1	2	0
Seed,	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	1	0	0
13. Produce,	-	-	0	2	1 $\frac{1}{2}$	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	1	3	1
14. Produce,	-	-	0	2	1	-	-	-	1	4	2
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	1	2	0
15. Produce,	-	-	0	1	1 $\frac{1}{2}$	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	0	6	1
16. Produce,	-	-	0	1	1	-	-	-	0	7	2
Seed,	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	0	5	0

17. Produce,

		P.	Q.	P.		Q.	B.	P.
17. Produce,	-	-	0	1	1	0	7	2
Seed,	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	0	5	0
18. Produce,	-	-	0	1	0	0	5	0
Seed,	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	0	2	2
19. Produce,	-	-	0	3	0	1	7	0
Seed,	-	-	-	-	-	0	3	0
Clear Produce,	-	-	-	-	-	1	4	0
20. Produce,	-	-	0	3	0	1	7	0
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	1	4	0
21. Produce,	-	-	0	1	0	0	6	1
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	0	3	0
22. Produce,	-	-	0	1	1	0	7	2
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	0	4	2
23. Produce,	-	-	0	1	0	0	6	1
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	0	3	1
24. Produce,	-	-	0	1	1	0	7	2
Seed,	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	0	4	2

OBSERVATIONS.

OBSERVATIONS.

Two bushels in this experiment, as in most of the preceding, maintain the superiority for horse-hoeing; but the larger quantities for the equally distant drilling. Many of the products are this year very poor; but the season was extremely unfavourable to the culture of barley: and as to horse-hoeing, I have been sufficiently convinced I should never, in that method, gain good ones.

GENERAL OBSERVATIONS.

I have selected these trials from all I made, as containing most of the varieties sketched in them. There are many doubtful points in them separately taken; such as products which seem to contradict the general event: but such variations from a uniformity of result, must be expected in all farming trials. That they may be proved of no consequence, I shall here throw the whole into one view, by drawing the averages of each article. When such seeming contradictions are mixed in all their varieties, equally with every article, the average is the essence of the whole, and is open to no such objections. I should, however, previously remark, that none of these years were noted for being good barley ones. Two of them were so remarkably wet, as nearly to destroy almost all the productions of the earth in wet soils. The horse-hoeing culture of barley I have likewise found, from other series of trials, to be radically unprofitable, that no good crops are to be raised by it, without an expence that renders the attempt absurd. These circumstances should explain the extreme poverty of many of the preceding ones.

Equally distant Rows, six Inches asunder.

2 PECKS per ACRE.

							2.	B.	P.
Clear produce in Experiment N ^o 1.	-	-	-	-	-	-	1	1	2
In N ^o 2.	-	-	-	-	-	-	0	5	3
							1	7	1
Average,	-	-	-	-	-	0	7	2	

1 BUSHEL.

								2. B. P.
Clear produce in Experiment N° 1.	-	-	-	-	-	-	-	1 3 2
In N° 2.	-	-	-	-	-	-	-	1 1 0
								<hr/> 2 4 2
Average,	-	-	-	-	-	-	1 2 1	

1½ BUSHEL.

Clear produce in Experiment N° 1.	-	-	-	-	-	-	-	1 5 2
In N° 2.	-	-	-	-	-	-	-	1 5 2
In N° 4.	-	-	-	-	-	-	-	1 3 0
								<hr/> 4 6 0
Average,	-	-	-	-	-	-	1 4 2	

2 BUSHELS.

Clear produce in Experiment N° 1.	-	-	-	-	-	-	-	1 7 2
In N° 2.	-	-	-	-	-	-	-	1 6 1
In N° 4.	-	-	-	-	-	-	-	1 2 2
In N° 5.	-	-	-	-	-	-	-	1 0 0
								<hr/> 6 0 1
Average,	-	-	-	-	-	-	1 4 0	

2½ BUSHELS.

Clear produce in Experiment N° 4.	-	-	-	-	-	-	-	2 1 2
In N° 5.	-	-	-	-	-	-	-	2 0 1
								<hr/> 4 1 3
Average,	-	-	-	-	-	-	2 0 3	

3 BUSHELS.

Clear produce in Experiment N° 4.	-	-	-	-	-	-	-	2 2 1
In N° 5.	-	-	-	-	-	-	-	2 1 0
								<hr/> 4 3 1
Average,	-	-	-	-	-	-	2 1 2	

3½ BUSHELS.

3½ BUSHEL.

							Q.	B.	P.
Clear produce in Experiment N° 5.							2	1	3
2 pecks,	-	-	-	-	-	-	0	7	2
1 bushel,	-	-	-	-	-	-	1	2	1
1½ bushel,	-	-	-	-	-	-	1	4	2
2 bushels,	-	-	-	-	-	-	1	4	0
2½ ditto,	-	-	-	-	-	-	2	0	3
3 ditto,	-	-	-	-	-	-	2	1	2
3½ ditto,	-	-	-	-	-	-	2	1	3

This flight recapitulation presents the comparison in one very clear view, and proves incontestibly, that the largest quantity of seed is the most advantageous. The progression is almost unbroken; each increase in seed is regularly attended by a corresponding increase of clear product.

Equally distant Rows, one Foot asunder.

2 PECKS per ACRE.

							Q.	B.	P.
Clear produce in Experiment N° 1.							1	4	0
In N° 2.							0	5	3
							2	1	3
Average,							1	0	3

1 BUSHEL.

Clear produce in Experiment N° 1.							1	4	3
In N° 2.							0	7	3
							2	4	2
Average,							1	2	1

1½ BUSHEL.

Clear produce in Experiment N° 1.							1	5	2
In N° 2.							1	5	2
In N° 4.							1	3	0
In N° 6.							1	0	2

M 2

In

In N^o 7.

In N^o 9.

Average,

3 1/2 BUSHEL.

Q. B. P.

0 7 1

0 6 0

7 3 3

1 1 4

2 BUSHEL.

Clear produce in Experiment N^o 1.

In N^o 2.

In N^o 4.

In N^o 5.

In N^o 6.

In N^o 7.

In N^o 8.

In N^o 9.

2 0 3

2 2 0

1 5 0

1 3 3

1 5 0

1 3 3

1 2 2

1 2 2

Average,

2 1/2 BUSHEL.

Clear produce in Experiment N^o 4.

In N^o 5.

In N^o 6.

In N^o 7.

In N^o 8.

In N^o 9.

2 2 3

2 1 2

1 7 0

1 7 0

1 4 2

1 3 1

Average,

3 BUSHEL.

Clear produce in Experiment N^o 4.

In N^o 5.

In N^o 6.

In N^o 7.

In N^o 8.

In N^o 9.

2 3 2

2 3 2

1 6 2

1 6 2

1 4 0

1 4 0

Average,

1 7 1

3 1/2 BUSHEL.

3 $\frac{1}{2}$ BUSHELS.

						Q. B. P.
Clear produce in Experiment N° 5.	-	-	-	-	-	2 3 0
In N° 8.	-	-	-	-	-	1 3 2
						<hr/>
						3 6 2
						<hr/>
Average,	-	-	-	-	-	1 7 1
2 pecks,	-	-	-	-	-	1 0 3
1 bushel,	-	-	-	-	-	1 2 1
1 $\frac{1}{2}$ ditto,	-	-	-	-	-	1 4 1
2 bushels,	-	-	-	-	-	1 5 0
2 $\frac{1}{2}$ ditto,	-	-	-	-	-	1 7 0
3 ditto,	-	-	-	-	-	1 8 7
3 $\frac{1}{2}$ ditto,	-	-	-	-	-	1 9 7

From this table we see plainly that the larger quantities of seed are the most advantageous for drilling in equally distant rows one foot asunder: but in one respect we have not the satisfaction I could wish; the three bushels and an half are only equal to three. Now whether this is only an accidental variation, like the inferiority of one and an half to one, or whether it is a pause in the increase which indicates a falling-off in product, had the experiments extended to larger quantities of seed, does not here appear. Perhaps four bushels, or four bushels and an half, would have proved more beneficial; or possibly they, and three and three and an half, might have been nearly on an equality. However this is but conjecture, from the quantities found in the broad-cast husbandry, which resembling equally distant rows when near each other, gives some reason for a conclusion of this sort. A bushel and an half and two bushels are clearly much inferior to three and three and an half; although I think they are something above the portions recommended for this drilling by several writers.

Equally distant Rows, eighteen Inches asunder.

2 PECKS per ACRE.

						Q. B. P.
Clear produce in Experiment N° 1.	-	-	-	-	-	1 1 2
In N° 2.	-	-	-	-	-	0 4 2
						<hr/>
						1 6 0
						<hr/>
Average,	-	-	-	-	-	0 7 0
						<hr/>
						1 BUSHEL.

1 BUSHEL.

	Q. B. P.
Clear produce in Experiment N ^o 1.	1 4 3
In N ^o 2.	0 6 2
	<hr/>
	2 3 1
Average,	1 1 3

1½ BUSHEL.

	Q. B. P.
Clear produce in Experiment N ^o 1.	1 5 2
In N ^o 2.	1 6 3
	<hr/>
	3 4 1
Average,	1 6 0

2 BUSHEL.

	Q. B. P.
Clear produce in Experiment N ^o 1.	1 7 2
In N ^o 2.	2 2 0
	<hr/>
	4 1 2
Average,	2 0 3
2 pecks,	0 7 0
1 bushel,	1 1 3
1½ ditto,	1 6 0
2 ditto,	2 0 3

From hence it appears very decisively, that the larger the quantity to two bushels *per* acre, the better the crop in this way of drilling; and there is much reason to suppose, that yet higher quantities would have been found more beneficial had they been tried. The rise of product in this scale is strong and unbroken.

*Equally distant Rows, 2 Feet asunder.*2 PECKS *per* ACRE.

	Q. B. P.
Clear produce in Experiment N ^o 1	1 0 1
In N ^o 2.	0 7 0
	<hr/>
	1 7 1
Average,	0 7 2

1 BUSHEL.

1 BUSHEL.

Clear produce in Experiment N° 1.

In N° 2.

2 B. P.

1 3 2
0 6 2

2 2 0

Average,

1 1 0

1 1/2 BUSHEL.

Clear produce in Experiment N° 1.

In N° 2.

In N° 4.

In N° 6.

In N° 7.

In N° 9.

1 4 1

1 5 2

1 4 1

1 2 1

0 6 0

0 4 3

7 3 0

Average,

1 1 3

2 BUSHEL.

Clear produce in Experiment N° 1.

In N° 2.

In N° 4.

In N° 5.

In N° 6.

In N° 7.

In N° 8.

In N° 9.

1 5 0

1 6 1

1 7 2

1 3 3

1 6 1

1 2 2

1 0 0

1 1 1

12 0 2

Average,

1 4 0

2 1/2 BUSHEL.

Clear produce in Experiment N° 4.

In N° 5.

In N° 6.

In N° 7.

2 0 1

1 7 0

1 4 2

1 3 1

In:

In N ^o .8.	-	-	-	-	-	-	-	-	-		Q. P. B.
In N ^o .9.	-	-	-	-	-	-	-	-	-	-	1 5 3
	-	-	-	-	-	-	-	-	-	-	1 2 0
Average,	-	-	-	-	-	-	-	-	-	-	9 6 3

[illegible][illegible]

Average,	-	-	-	-	-	-	I	7	I			
2 pecks,	-	-	-	-	-	-	-	-	-	0	7	2
1 bushel,	-	-	-	-	-	-	-	-	-	I	I	0
1 $\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	-	-	I	I	3
2 ditto,	-	-	-	-	-	-	-	-	-	I	4	0
2 $\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	-	-	I	5	0
3 ditto,	-	-	-	-	-	-	-	-	-	I	7	0
3 $\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	-	-	I	7	I

This scale is particularly satisfactory: the rise of product is quite regular, with the increase of feed; not once broken. From which it is clearly proved, the advantage in this kind of drilling, of using much more feed than is recommended by late writers; and we cannot hesitate to pronounce, that if this is the case with 2 feet rows, it must undoubtedly be so with the preceding division, *viz.* 18 inches: as it appears to be the resemblance between these kinds of drilling, and broadcast sowing, that occasions the advantage of much feed.

Equally

Equally distant Rows, 3 Feet asunder.

2 PECKS per ACRE.

Q. B. P.

Clear produce in experiment N° 1. - - - 0 4 2

1 BUSHEL.

Clear produce in experiment N° 1. - - - 1 1 0

1½ BUSHEL.

In N° 1. - - - 1 3 0

2 BUSHELS.

In N° 1. - - - 1 1 1

This comparison leaves some room to think that 2 bushels in such wide rows as 3 feet, are too great a quantity of seed : 1½ here exceed it.

Double Rows 1 Foot asunder, with 4 Feet intervals.

2 PECKS per ACRE.

Clear produce in experiment N° 2. - - - 0 2 0

1 BUSHEL.

In N° 2. - - - 0 4 0

1½ BUSHEL.

In N° 2. - - - 1 4 1

In N° 4. - - - 0 6 0

In N° 6. - - - 0 4 3

In N° 7. - - - 0 3 2

In N° 9. - - - 0 3 2

3 6 0

Average,

2 BUSHELS.

In N° 2. - - - 1 5 0

In N° 4. - - - 1 0 0

In N° 5. - - - 1 2 2

In N° 6. - - - 1 3 3

In N° 7. - - - 1 0 0

Average,

2 $\frac{1}{2}$ BUSHELS.

Average,

3 BUSHELS.

Average,

3 $\frac{1}{2}$ BUSHELS.

Average

[illegible]

								Q. B. P.
3 ditto,	-	-	-	-	-	-	-	1 0 1
3½ ditto,	-	-	-	-	-	-	-	0 7 0

The result of this table is very clear and decisive; for the quantities rise higher than the highest profitable one, so that we have an ascending and descending series; which are so regular, as not to be once broken. Two bushels and two and an half appear to be the most advantageous portions; and as they are equal in produce, it gives no slight reason to conclude, that the exact quantity proper for an acre, lies between them; or very near unto one of them. Three bushels not producing equally, and three and an half, less still, proves this extremely plain. What portion of seed is fixed on by the writers on the new husbandry for this kind of drilling, I do not at present recollect; but as they generally reckon two bushels an ample allowance for an acre of land, broadcast, they certainly must think the quantity much too great for drilling: however, the plain evidence of experience proves clearly to me, that the saving seed has been a kind of infatuation among them: that they have conducted themselves in this point, by reason and not experiment, I judge, by the few trials we have had on the quantity of seed: all I have seen, particularly M. de Chateauvieux' prove that the largest quantities tried, were the most beneficial.

Double Rows 1 Foot asunder, with 3 Feet intervals.

1½ BUSHEL.

								Q. B. P.
In N° 6.	-	-	-	-	-	-	-	0 6 0
In N° 7.	-	-	-	-	-	-	-	0 3 2
In N° 9.	-	-	-	-	-	-	-	0 4 3
								<hr/>
								1 6 1
								<hr/>
Average,	-	-	-	-	-	0	4 3	

2 BUSHELS.

In N° 6.	-	-	-	-	-	-	-	1 0 0
In N° 7.	-	-	-	-	-	-	-	1 0 0
In N° 8.	-	-	-	-	-	-	-	0 6 3
In N° 9.	-	-	-	-	-	-	-	0 6 3
								<hr/>
								3 5 2
								<hr/>
Average,	-	-	-	-	-	0	7 1	

N 2

2½ BUSHELS.

Q. B. P.

[illegible]

In N° 8.	-	-	-	-	-	-	0	4	0
1½ bushel,	-	-	-	-	-	-	0	4	3
2 ditto,	-	-	-	-	-	-	0	7	1
2½ ditto,	-	-	-	-	-	-	0	7	2
3 ditto,	-	-	-	-	-	-	0	4	1
3½ ditto,	-	-	-	-	-	-	0	4	0

From this little scale it is apparent, that the proper quantity of seed-barley, for this kind of drilling, is from two bushels to two $\frac{1}{2}$; those quantities being so nearly equal; and three so much inferior, shews plainly, that two $\frac{1}{2}$ are the utmost point. The difference of crop between two $\frac{1}{2}$ and three is very considerable. Whenever a table takes in, like this, both the increase and decrease of product, we remain in no doubt about the lesson it inculcates.

Treble Rows 1 Foot asunder, with 4 Feet intervals.

Q. B. P.

In N° 4.	-	-	-	-	-	-	I	O	2
In N° 6.	-	-	-	-	-	-	I	O	2

In N° 7.	-	-	-	-	-	-	-	2. B. P.
In N° 9.	-	-	-	-	-	-	-	0 6 0
								0 7 1
								<hr/> 3 6 1 <hr/>
Average,	-	-	-	-	-	-	0 7 2	

2 BUSHELS.

In N° 4.	-	-	-	-	-	-	-	I	3	3	
In N° 5.	-	-	-	-	-	-	-	I	5	0	
In N° 6.	-	-	-	-	-	-	-	I	3	3	
In N° 7.	-	-	-	-	-	-	-	I	I	I	
In N° 8.	-	-	-	-	-	-	-	I	I	I	
In N° 9.	-	-	-	-	-	-	-	I	0	0	
									<hr/>	<hr/>	<hr/>
									7	7	0
Average,	-	-	-	-	-	-	-	I	2	2	

2½ BUSHELS.

In N° 4.	-	-	-	-	-	-	2	0	1
In N° 5.	-	-	-	-	-	-	1	7	0
In N° 6.	-	-	-	-	-	-	1	3	1
In N° 7.	-	-	-	-	-	-	1	3	1
In N° 8.	-	-	-	-	-	-	1	0	2
In N° 9.	-	-	-	-	-	-	0	2	2
							<hr/>		
							8	0	3
							<hr/>		
Average,	-	-	-	-	-	1 2 3			

3 BUSHELS.

In N° 4.	-		-		-		-		I	4	O
In N° 5.	-		-		-		-		2	I	O
In N° 6.		-		-		-		-	I	2	3
In N° 7.	-		-		-		-		I	O	I
In N° 8.	-		-		-		-		I	O	I
In N° 9.	-		-		-		-		O	4	2
Average,	-		-		-		-		7	4	3

3½ BUSHELS.

$3\frac{1}{2}$ BUSHELS.

								Q. B. P.
In N ^o 5.	-	-	-	-	-	-	-	1 3 2
In N ^o 8.	-	-	-	-	-	-	-	0 4 0
								<hr/> 1 7 2
Average,	-	-	-	-	-	-	0 7 3	
$1\frac{1}{2}$ bushel,	-	-	-	-	-	-	-	0 7 2
2 bushels,	-	-	-	-	-	-	-	1 2 2
$2\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	1 2 3
3 ditto,	-	-	-	-	-	-	-	1 2 0
$3\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	0 7 3

The same observations I before made are equally applicable to this scale. By the ascent and descent being seen, we may determine a mean, near at least to the exact quantity most advantageous. It here appears to be two bushels and an half, and two bushels nearly equal. It is, however, somewhat remarkable, that three bushels and an half should be attended with such a comparatively small produce.

Treble Rows, one Foot asunder, with three Feet intervals.

 $1\frac{1}{2}$ BUSHEL.

								Q. B. P.
In N ^o 7,	-	-	-	-	-	-	-	0 6 0
In N ^o 9,	-	-	-	-	-	-	-	0 6 0
								<hr/> 1 4 0
Average,	-	-	-	-	-	-	0 6 0	

2 BUSHELS.

In N ^o 7.	-	-	-	-	-	-	-	1 2 2
In N ^o 8.	-	-	-	-	-	-	-	1 0 0
In N ^o 9.	-	-	-	-	-	-	-	0 6 3
								<hr/> 3 1 1
Average,	-	-	-	-	-	-	1 0 1	

 $2\frac{1}{2}$ BUSHELS.

$2\frac{1}{2}$ BUSHELS.

								Q.	B.	P.
In N° 7.	-	-	-	-	-	-	-	1	2	0
In N° 8.	-	-	-	-	-	-	-	0	7	2
In N° 9.	-	-	-	-	-	-	-	0	5	0
								<hr/>	<hr/>	<hr/>
								2	6	2

Average, - - - - - 0 7 2

3 BUSHELS.

In N° 7.	-	-	-	-	-	-	-	0	7	0
In N° 8.	-	-	-	-	-	-	-	0	7	0
In N° 9.	-	-	-	-	-	-	-	0	3	1
								<hr/>	<hr/>	<hr/>
								2	1	1

Average, - - - - - 0 5 3

 $3\frac{1}{2}$ BUSHELS.

In N° 8.	-	-	-	-	-	-	-	0	5	1
$1\frac{1}{2}$ bushel,	-	-	-	-	-	-	-	0	6	0
2 bushels,	-	-	-	-	-	-	-	1	0	1
$2\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	0	7	2
3 ditto,	-	-	-	-	-	-	-	0	5	3
$3\frac{1}{2}$ ditto,	-	-	-	-	-	-	-	0	5	1

Two bushels are, in this mode of drilling we find, much superior to any of the former; one and an half being inferior, and all the above very much so, is a strong proof of this. The gradual fall from an increase of seed could proceed from nothing but the impropriety of larger portions.

Upon the whole, it appears from these trials, which (separately taken) are pretty decisive, that for the horse-hoeing culture of barley, about two bushels, or two and an half, are the proper quantity of seed; and for equally distant rows of six inches, one foot, eighteen inches, or two feet, three, three and an half, and in some cases perhaps more, are the due portions. This result is very contrary to the instructions of some modern writers of no slight authority, who are of opinion, that two pecks, or a bushel,

bushel, are highly sufficient. Now I would not, in any case, be thought to oppose these experiments to the experience of gentlemen of superior genius, knowledge, or spirit; but I may, at the same time, be allowed to suppose, that so many trials-as I have executed accurately, and registered minutely, cannot well deceive me: the contradictions, therefore, between us must be attributed to variations of soil. Considering what large quantities of seed I have found from experiment proper in the broad-cast husbandry, on this soil, I do not think these for drilling appear in the least opposite to one's reason. I should rather have conceived they would have turned out higher; however, in all these matters one cannot urge mere reasoning counter to experiment. In all such points, which from opposition of authority remain dubious in the minds of some, it is much to be wished, that gentlemen, who on different soils try experiments, would give their attention to them, and form comparative trials in small, of many variations, that some general truths may at last be gained, to satisfy those who will not be instructed by the authority of one or two persons.

S E C T. V.

Of the TIME of SOWING.

IN the devising experiments in agriculture, any person who gives much attention to the business, and carries it on with spirit, will find one circumstance that cannot fail of rendering his views extremely complicated, and involving him in series of trials much more numerous and extensive than he at first imagined. When very accurate enquiries are making into the nature of soils relative to certain productions, into the methods of sowing, &c. other points will infallibly break upon the view that demand an equal attention: first, the quantity of seed is found to be a matter of great import; then a distinction is made between the quantity in the old and in the new methods. And now we come to another circumstance that claims our regard no less than the former; *viz.* the time of sowing.

A philosophical precision in these matters can never be gained, without giving a fair, equal, and judicious attention to every circumstance that concerns the culture of all vegetables. A relation of an experiment on barley, for instance, separately taken, may be extremely useful, and of authority; but scarce one can singly be produced that does not leave in the mind of the reader a curiosity to be further informed of some unrelated circumstances, or some points of general knowledge, that would supply such omissions. We see that the old or the new method is preferable; but what were the quantities of seed? Might not the case have been different with different quantities? What is precisely the portion most beneficial? Suppose a trial to decide this point; then quere, the time of sowing? Is it clear that every former circumstance had the exact treatment that was necessary relative to time? Are conclusions the same from early and late sowing? It is this eternal chain of queries which occurs to a man who employs himself in experimental agriculture, that will always be sure to convince him he is never to arrive at his journey's end. The longer he continues his trials, the stronger he will feel the necessity

cessity of continuing them. My experiments on the time of sowing barley are all in small, which is absolutely necessary from all being comparative.

EXPERIMENT N° 1.

Marked in 1765, upon a piece of summer-fallowed land in field L*, the following drills, a perch in length, and sowed each with two ounces of barley. They were two feet asunder drill from drill. The variation only in the times of sowing, as under :

- N° 1. The 27th of February.
 2. March the 5th.
 3. - - 15th.
 4. - - 26th. The land more adhesive than proper for barley sowing.
 5. April 6th.
 6. - 22d.
 7. May 8th.

The drills were kept clean by hand-hoeing, which was performed to all at the same time. The produce as follows :

	Ounces.
N° 1. - - - - -	12
2. - - - - -	11
3. - - - - -	9
4. - - - - -	7½
5. - - - - -	9½
6. - - - - -	8
7. - - - - -	7

The proportion of these *per* acre is a matter of no consequence ; as that of one to the other is the only point which requires notice ; however, it may not be amiss to observe, that twelve ounces *per* perch length of this drilling are at the rate of about eighteen bushels *per* acre. The trial proves the necessity of sowing early : for the decrease of produce is not regular ; yet it is such as leaves reason for supposing the cause pretty strong. Number 4 being inferior to 5 and 6, shews the ill consequence of stirring land for barley while it is in the least wet.

EXPERIMENT

EXPERIMENT N^o. 2.

Marked, in spring 1765, on a piece of fallow, in field L*, the following drills, each sown with two ounces of barley at different times :

N^o 1. February 27th.

2. March 5th.

3. - - 15th.

4. - - 30th.

5. April 6th.

Ploughed the land again, and then continued

6. - - 13th.

7. - - 22d.

8. May 2d.

Another plowing :

9. - - 13th.

10. - - 21st.

11. - - 29th.

The hoeing and weeding equal to all ; but performed at different times, proportioned to their growth. The produce as follows :

								Ounces.
N ^o 1.	-	-	-	-	-	-	-	11½
2.	-	-	-	-	-	-	-	10
3.	-	-	-	-	-	-	-	10
4.	-	-	-	-	-	-	-	9½
5.	-	-	-	-	-	-	-	9
6.	-	-	-	-	-	-	-	9½
7.	-	-	-	-	-	-	-	9
8.	-	-	-	-	-	-	-	6½
9.	-	-	-	-	-	-	-	8
10.	-	-	-	-	-	-	-	7
11.	-	-	-	-	-	-	-	7½

These products are not free from contradictions. I know not to what to attribute the inferiority of Number 8 to all the rest ; the regularity of the fall is otherwise broken ; but the general result is very strong, that early sowing is of much consequence, and far exceeds a late season, notwithstanding the advantage of so many more plowings to the latter. That circumstance gives a vast superiority to sowing early.

EXPERIMENT N° 3.

Marked several drills, each a perch long, upon a fallow in field M* and sowed them in spring 1765, each with two ounces of barley, at the following times :

N° 1. February 27th.

2. March 4th.

3. - 15th.

A fresh ploughing.

4. - 30th.

5. April 6th.

6. - 13th.

Another ploughing.

7. - 20th.

8. - 27th.

9. May 6th.

10. - 14th.

11. - 22d.

Another ploughing.

12. - 31st.

13. June 6th.

Hand-hoed them equally, and every article of culture similar: the produce,

N°		Ounces.
1.	-	14
2.	-	14 $\frac{1}{4}$
3.	-	13 $\frac{1}{2}$
4.	-	12
5.	-	13
6.	-	11 $\frac{1}{2}$
7.	-	11 $\frac{1}{4}$
8.	-	10
9.	-	8
10.	-	8
11.	-	8 $\frac{1}{4}$
12.	-	7
13.	-	5 $\frac{1}{2}$

I cannot but consider this experiment as extremely satisfactory: small irregularities are not worth mentioning; the general tenor of the trial is what carries the authority; and it is here very clear and decisive. The difference between sowing very early and very late, is more than half the crop; notwithstanding three ploughings in favour of the smallest product: this difference is so extremely great, that a farmer ought most certainly to aim as much as he possibly can, at getting his barley seed early into the ground. Three ploughings in the spring properly seasoned, one would imagine to be a point of no trifling consequence, and especially to a vegetable that delights so much in a fine tilth as barley; and yet we find that this advantage is not comparable to an early sowing without it. Some soils may be of so rich and crumbling a nature, as to work very fine and mellow the first spring ploughing; the first of these sowings, tho' not answerable to that description, harrowed tolerably fine; but not near so fine as the later ones.

EXPERIMENT N° 4.

Marked at the same time as N° 3, several perches of fallow in field M*, and sowed them at the following seasons, each two ounces of seed.

N° 1. February 27th.

2. March 4th.

3. - 15th.

4. - 25th.

A fresh ploughing given.

5. April 6th.

6. - 13th.

7. - 20th.

Another ploughing.

8. - 29th.

9. May 6th.

10. - 14th.

11. - 22d.

Another ploughing.

12. - 31st.

13. June 6th.

Another ploughing.

14. - 13th.

The hoeing equal, but performed at various times, according to growth, all other management perfectly similar: the produce as follows,

N ^o	Ounces.
1.	15
2.	14
3.	14½
4.	13
5.	11
6.	8
7.	9½
8.	10
9.	7½
10.	7
11.	7½
12.	6
13.	5
14.	3½

Several contradictions in this trial I cannot account for; but the general event of it strongly confirms the preceding ones. The drills first sown, yield near five times as much as the last: indeed the poor produce of N^o 14, shews plainly, that a farmer should never on any account, venture barley-feed into the ground so late as June: he should always consider that the consequence five hundred to one, is a wretched crop; and another universal maxim, he ought never to forget is, that a small crop is gained at very near as great an expence as a good one: seed, rent, tillage, harvesting, &c. &c. are equal to both. And when accidents, bad management, or bad weather, have driven him so late before he can sow, it certainly is the best husbandry to desist, and leave the land for the next season, which is that of turnep-sowing, since there can be no doubt, but a good crop of an inferior sort, is much preferable to a bad one of the best kind.

EXPERIMENT N^o 5.

In the spring of 1766, marked some drills, a perch in length, of fallow land in field L*, and sowed them each with two ounces of barley, at the following seasons,

- N^o 1. February 17th.
 2. - 24th.

3. March

3. March 5th, the weather remarkably fine.
 4. - 12th, ditto.

A fresh ploughing.

5. - 17th, ditto.
 6. April 10th, after very heavy rains, but the land dry enough to stir.
 7. - 16th, fine.
 8. - 26th, showery dubious weather; a bad sowing season.

Another ploughing.

9. May 17th, the weather so uncommonly wet, that I could not continue the sowing sooner.
 10. - 29th, a very bad season.

Another ploughing.

11. June 7th.
 12. - 13th.

Another ploughing.

13. - 20th.
 14. - 25th.

Culture and management equal to all, as before: the produce as follows,

	Ounces.
N ^o 1. - - - - -	11 $\frac{1}{2}$
2. - - - - -	12
3. - - - - -	13
4. - - - - -	13
5. - - - - -	11
6. - - - - -	6
7. - - - - -	6 $\frac{1}{4}$
8. - - - - -	5 $\frac{1}{4}$
9. - - - - -	4
10. - - - - -	4
11. - - - - -	2 $\frac{1}{4}$
12. - - - - -	2 $\frac{1}{2}$
13. - - - - -	2 $\frac{3}{4}$
14. - - - - -	2

Upon this experiment it is to be observed, that the state of the season has a strong effect independently of early or late sowing; this appears from the superiority of N^o 2, 3, and 4, to N^o 1; but notwithstanding this

The hoeing equal, but performed at various times, according to growth, all other management perfectly similar: the produce as follows,

N ^o	Ounces.
1.	15
2.	14
3.	14 $\frac{1}{2}$
4.	13
5.	11
6.	8
7.	9 $\frac{1}{2}$
8.	10
9.	7 $\frac{1}{2}$
10.	7
11.	7 $\frac{1}{2}$
12.	6
13.	5
14.	3 $\frac{1}{2}$

Several contradictions in this trial I cannot account for; but the general event of it strongly confirms the preceding ones. The drills first sown, yield near five times as much as the last: indeed the poor produce of N^o 14, shews plainly, that a farmer should never on any account, venture barley-feed into the ground so late as June: he should always consider that the consequence five hundred to one, is a wretched crop; and another universal maxim, he ought never to forget is, that a small crop is gained at very near as great an expence as a good one: seed, rent, tillage, harvesting, &c. &c. are equal to both. And when accidents, bad management, or bad weather, have driven him so late before he can sow, it certainly is the best husbandry to desist, and leave the land for the next season, which is that of turnep-sowing, since there can be no doubt, but a good crop of an inferior sort, is much preferable to a bad one of the best kind.

EXPERIMENT N^o 5.

In the spring of 1766, marked some drills, a perch in length, of fallow land in field L*, and sowed them each with two ounces of barley, at the following seasons,

N^o 1. February 17th.

2. - 24th.

3. March

3. March 5th, the weather remarkably fine.

4. - 12th, ditto.

A fresh ploughing.

5. - 17th, ditto.

6. April 10th, after very heavy rains, but the land dry enough to stir.

7. - 16th, fine.

8. - 26th, showery dubious weather; a bad sowing season.

Another ploughing.

9. May 17th, the weather so uncommonly wet, that I could not continue the sowing sooner.

10. - 29th, a very bad season.

Another ploughing.

11. June 7th.

12. - 13th.

Another ploughing.

13. - 20th.

14. - 25th.

Culture and management equal to all, as before: the produce as follows,

	Ounces.
N ^o 1.	11 $\frac{1}{2}$
2.	12
3.	13
4.	13
5.	11
6.	6
7.	6 $\frac{1}{4}$
8.	5 $\frac{1}{4}$
9.	4
10.	4
11.	2 $\frac{3}{4}$
12.	2 $\frac{1}{2}$
13.	2 $\frac{3}{4}$
14.	2

Upon this experiment it is to be observed, that the state of the season has a strong effect independently of early or late sowing; this appears from the superiority of N^o 2, 3, and 4, to N^o 1; but notwithstanding this

this circumstance, yet sowing early is more than able to reverse it, as we find by the succeeding numbers. The weather in June, though not dry for that season, yet was much more so than one barley-seed time in twenty; and yet, the products of the sowings in June are miserable. The trial upon the whole is extremely satisfactory, for notwithstanding these circumstances of weather, and other variations, yet there is no comparison between the early and late sowings in general.

EXPERIMENT N° 6.

At the same time as N° 5, marked some drills, a perch long, of turnep-land in field L*, and sowed them each with two ounces of barley, at the following times:

N° 1. February 17th.

2. - 24th.

3. March 5th, the weather uncommonly fine.

4. - 11th, ditto.

A fresh ploughing.

5. - 16th, ditto.

6. April 10th, the preceding weather extremely wet.

7. - 16th, fine.

8. - 26th, showery weather.

Another ploughing.

9. May 17th, too wet until this day.

10. - 29th.

Another ploughing.

11. June 7th.

12. - 13th.

Another ploughing.

13. - 20th.

14. - 25th.

15. - 31st.

Culture and management all the same: the produce as follows,

	Ounces.
N° 1.	12
2.	11
3.	11 $\frac{1}{4}$
4.	11 $\frac{1}{4}$

Ounces.

5.	-	-	-	-	-	-	10 $\frac{1}{4}$
6.	-	-	-	-	-	-	5 $\frac{1}{4}$
7.	-	-	-	-	-	-	6
8.	-	-	-	-	-	-	6 $\frac{1}{2}$
9.	-	-	-	-	-	-	8 $\frac{1}{4}$
10.	-	-	-	-	-	-	8 $\frac{1}{4}$
11.	-	-	-	-	-	-	7
12.	-	-	-	-	-	-	6 $\frac{1}{4}$
13.	-	-	-	-	-	-	6
14.	-	-	-	-	-	-	3
15.	-	-	-	-	-	-	2 $\frac{1}{2}$

The result of this experiment very much confirms the preceding. We find in this, as well as that, early sowing of sufficient power to ballance all other circumstances. It is a most remarkable object in husbandry, or such a prodigious difference between early and late sowing would not be found. No farmer can attend too much to variations in a branch of his conduct that are followed by the gain or loss of double, treble, and even five times his crop. It is a common practice among the farmers of this neighbourhood to delay their barley sowing till the end of May, on account of giving the more tillage. Whenever they act in this manner, they begin the spring ploughings precisely at the season they ought to sow, which evidently is as soon as they can get on to the land.

EXPERIMENT N^o 7.

Marked some square perches in spring 1766, in field M*, on turnep-land, and drilled each with two ounces of barley, at the following seasons:

N^o 1. February 17th.

2. - - - 24th.

3. March 4th. The weather extremely fine.

4. - - - 12th. ditto.

A fresh ploughing.

5. - - - 17th. ditto.

6. April 10th. The weather had been exceeding wet; but the soundness of the land is such, that it is now in good order.

7. - - - 16th.
 8. - - - 26th.
 Another ploughing.
 9. May 17th.
 10. - - - 29th.
 Another ploughing.
 11. June 7th.
 12. - - - 13th.
 Another ploughing.
 13. - - - 20th.
 14. - - - 25th.

Culture and management the same. The hoeings performed according to growth. The produce as follows:

		Ounces.
N ^o 1.	- - - - -	14 $\frac{1}{4}$
2.	- - - - -	13 $\frac{1}{4}$
3.	- - - - -	12
4.	- - - - -	14
5.	- - - - -	13
6.	- - - - -	11
7.	- - - - -	11
8.	- - - - -	10 $\frac{1}{4}$
9.	- - - - -	11
10.	- - - - -	8
11.	- - - - -	6
12.	- - - - -	5 $\frac{1}{2}$
13.	- - - - -	5 $\frac{1}{4}$
14.	- - - - -	5

The gradations of these products is, upon the whole, more uninterrupted than might be expected in a trial of fourteen divisions. Number 3 and Number 9 are indeed very near each other in product, but very different in season; and 3 being inferior to 4 and 5, are also contradictions: and there are some other flighter circumstances of the same sort. But notwithstanding these points, yet the general result is very clear and decisive. The difference between the first and the last sown is very great; insomuch, that a farmer would gain or lose immensely by an improper choice of his sowing. The lesson inculcated by this trial may be thought by some to be common to any one's apprehension. But I do not form experiments

Another ploughing

d other perches

showed them as before, at the following times:

nor any variation in the

yth. The produce :
Ounces

-	-	12
-	-	$13\frac{1}{4}$
-	-	$12\frac{1}{4}$
-	-	$11\frac{1}{2}$
-	-	$11\frac{1}{2}$
-	-	10

8

	Ounces.
8. - - - - -	8 $\frac{1}{4}$
9. - - - - -	7 $\frac{1}{4}$
10. - - - - -	9
11. - - - - -	6 $\frac{1}{4}$
12. - - - - -	5 $\frac{1}{4}$
13. - - - - -	5
14. - - - - -	5

The grand lesson concerning *time* is here very explicit. The difference is extremely great between the proper and the improper season ; and this circumstance is independent of the apparent contradictions to be met with in the decrease of product. And this general result has proved so regular, in several seasons, and on different soils, that I have no conception future experience should reverse the ideas I have now acquired on this point.

EXPERIMENT N° 9.

In spring 1767, marked some drills, each a perch long, as before, in field L* : the piece had been fallowed in 1766. Sowed each with two ounces of barley, at the following times :

N° 1. February 14th. The soil rather too moist for sowing.

2. - - - 23d.

3. March 2d.

A fresh ploughing.

4. - 13th, very fine weather.

5. - 27th.

Another ploughing.

6. April 7th.

7. - 14th.

8. - 22d.

9. - 30th.

Another ploughing.

10. May 7th.

11. - 14th.

12. - 23d.

13. - 28th.

Another

Another ploughing.

14. June 9th.

15. - 15th.

16. - 25th.

Another ploughing.

17. - 30th.

The culture and management perfectly equal, as remarked in the preceding trials : the produce as follows,

										Ounces.
N ^o 1.	-	-	-	-	-	-	-	-	-	11 $\frac{1}{4}$
2.	-	-	-	-	-	-	-	-	-	11
3.	-	-	-	-	-	-	-	-	-	11 $\frac{1}{2}$
4.	-	-	-	-	-	-	-	-	-	9
5.	-	-	-	-	-	-	-	-	-	9
6.	-	-	-	-	-	-	-	-	-	8
7.	-	-	-	-	-	-	-	-	-	6 $\frac{3}{4}$
8.	-	-	-	-	-	-	-	-	-	6 $\frac{1}{2}$
9.	-	-	-	-	-	-	-	-	-	6 $\frac{3}{4}$
10.	-	-	-	-	-	-	-	-	-	5 $\frac{1}{2}$
11.	-	-	-	-	-	-	-	-	-	5 $\frac{1}{2}$
12.	-	-	-	-	-	-	-	-	-	5
13.	-	-	-	-	-	-	-	-	-	4 $\frac{3}{4}$
14.	-	-	-	-	-	-	-	-	-	4 $\frac{3}{4}$
15.	-	-	-	-	-	-	-	-	-	3
16. }	Came to nothing.									
17. }										

I should remark, on this experiment, that the year 1767 was remarkably unfavourable to most of the productions of the earth, and especially to barley on moist land ; this accounts for the poverty of most of these crops. Early sowing, however, maintains its superiority in this, as well as in the preceding years : the difference between the end of February, or the beginning of March, and the beginning of May is very great ; and we find that an increase of tillage is of little consequence towards remedying a late sowing : this general rule, we see, in the strongest manner verified, notwithstanding some slight variations from regularity in the result of this trial.

Another elongated.

17. Came to nothing.

...on the argument that the ... was ...

EXPERIMENT No. II.

land yielded turneps in 1766. The produce:

[illegible]

	Ounces.
8.	8
9.	5 $\frac{1}{2}$
10.	4 $\frac{1}{2}$
11.	4 $\frac{1}{4}$
12.	3 $\frac{1}{2}$
13.	4 $\frac{1}{4}$
14.	4
15.	3 $\frac{1}{4}$
16.	2
17.	Came to nothing.

Another confirmation of the preceding experiments. Each has some variations, but all agree in the important matter of early or late: the earlier the corn is in the ground, the crop is palpably the better; a maxim which the farmer it is plain should not forget.

EXPERIMENT N° 12.

At the same time, and in the same field, executed on potatoe-land the same trial. The produce as follows:

N°	Ounces.
1.	14
2.	13
3.	12
4.	12 $\frac{1}{2}$
5.	11 $\frac{1}{4}$
6.	11
7.	8 $\frac{3}{4}$
8.	8 $\frac{1}{2}$
9.	8 $\frac{1}{4}$
10.	5 $\frac{1}{4}$
11.	4 $\frac{1}{2}$
12.	4 $\frac{1}{2}$
13.	4
14.	3 $\frac{1}{4}$
15.	3
16.	1 $\frac{1}{2}$
17.	Came to nothing.

Nothing

Nothing can be a stronger confirmation of the preceding experiments than this: very few of them are unbroken in the result. The superiority of the early seasons is very striking.

GENERAL OBSERVATIONS.

It is requisite to take a single view of these trials, to discover the average crop of each season. Such a deduction includes all the varieties of weather, state of the soil, increase of tillage, &c. &c. and consequently cannot fail of shewing, with great exactness, the most advantageous season.

FEBRUARY.

									Ounces.
Product of Experiment N° 1.	-	-	-	-	-	-	-	-	12
2.	-	-	-	-	-	-	-	-	11 $\frac{1}{2}$
3.	-	-	-	-	-	-	-	-	14
4.	-	-	-	-	-	-	-	-	15
5.	-	-	-	-	-	-	-	-	11 $\frac{1}{2}$
Ditto.	-	-	-	-	-	-	-	-	12
N° 6.	-	-	-	-	-	-	-	-	12
Ditto.	-	-	-	-	-	-	-	-	11
N° 7.	-	-	-	-	-	-	-	-	14 $\frac{1}{4}$
Ditto.	-	-	-	-	-	-	-	-	13 $\frac{1}{4}$
N° 8.	-	-	-	-	-	-	-	-	12
Ditto.	-	-	-	-	-	-	-	-	13 $\frac{1}{4}$
N° 9.	-	-	-	-	-	-	-	-	11 $\frac{1}{4}$
Ditto.	-	-	-	-	-	-	-	-	11
N° 10.	-	-	-	-	-	-	-	-	12
Ditto.	-	-	-	-	-	-	-	-	11 $\frac{1}{2}$
N° 11.	-	-	-	-	-	-	-	-	13 $\frac{1}{4}$
Ditto.	-	-	-	-	-	-	-	-	12 $\frac{1}{2}$
N° 12.	-	-	-	-	-	-	-	-	14
Ditto.	-	-	-	-	-	-	-	-	13
Average,	-	-	-	-	-	-	-	-	12 $\frac{1}{2}$

MARCH.

M. A. R. G. H.

Ounces.

Product in Experiment N° 1.						11
	Ditto.	-	-	-	-	9
	Ditto.	-	-	-	-	7½
N° 2.	-	-	-	-	-	10
	Ditto.	-	-	-	-	9½
	Ditto.	-	-	-	-	14½
N° 3.	-	-	-	-	-	13½
	Ditto.	-	-	-	-	12
	Ditto.	-	-	-	-	14
N° 4.	-	-	-	-	-	14½
	Ditto.	-	-	-	-	13
	Ditto.	-	-	-	-	13
N° 5.	-	-	-	-	-	13
	Ditto.	-	-	-	-	11
	Ditto.	-	-	-	-	11½
N° 6.	-	-	-	-	-	11¼
	Ditto.	-	-	-	-	10¾
	Ditto.	-	-	-	-	12
N° 7.	-	-	-	-	-	14
	Ditto.	-	-	-	-	13
	Ditto.	-	-	-	-	12¼
N° 8.	-	-	-	-	-	11½
	Ditto.	-	-	-	-	11½
	Ditto.	-	-	-	-	11½
N° 9.	-	-	-	-	-	11½
	Ditto.	-	-	-	-	9
	Ditto.	-	-	-	-	9
N° 10.	-	-	-	-	-	11½
	Ditto.	-	-	-	-	9
	Ditto.	-	-	-	-	10¼
N° 11.	-	-	-	-	-	11½
	Ditto.	-	-	-	-	11½
	Ditto.	-	-	-	-	9¼
N° 12.	-	-	-	-	-	12
	Ditto.	-	-	-	-	12½
	Ditto.	-	-	-	-	11¼
Average,						11½

APRIL.

Product in N° 1.

Ounces.

	Ditto.	-	-	-	-	-	-	-	-	9 $\frac{1}{2}$
N° 2.	Ditto.	-	-	-	-	-	-	-	-	8
	Ditto.	-	-	-	-	-	-	-	-	9
	Ditto.	-	-	-	-	-	-	-	-	9 $\frac{1}{2}$
N° 3.	Ditto.	-	-	-	-	-	-	-	-	9
	Ditto.	-	-	-	-	-	-	-	-	13
	Ditto.	-	-	-	-	-	-	-	-	11 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	11 $\frac{1}{4}$
	Ditto.	-	-	-	-	-	-	-	-	10
N° 4.	Ditto.	-	-	-	-	-	-	-	-	11
	Ditto.	-	-	-	-	-	-	-	-	8
	Ditto.	-	-	-	-	-	-	-	-	9 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	10
N° 5.	Ditto.	-	-	-	-	-	-	-	-	6
	Ditto.	-	-	-	-	-	-	-	-	6 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{3}{4}$
N° 6.	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{1}{4}$
	Ditto.	-	-	-	-	-	-	-	-	6
	Ditto.	-	-	-	-	-	-	-	-	6 $\frac{1}{2}$
N° 7.	Ditto.	-	-	-	-	-	-	-	-	11
	Ditto.	-	-	-	-	-	-	-	-	11
	Ditto.	-	-	-	-	-	-	-	-	10 $\frac{1}{4}$
N° 8.	Ditto.	-	-	-	-	-	-	-	-	10
	Ditto.	-	-	-	-	-	-	-	-	10
	Ditto.	-	-	-	-	-	-	-	-	8 $\frac{1}{4}$
N° 9.	Ditto.	-	-	-	-	-	-	-	-	8
	Ditto.	-	-	-	-	-	-	-	-	6 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	6 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	6 $\frac{3}{4}$
N° 10.	Ditto.	-	-	-	-	-	-	-	-	8 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	8
	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	5
N° 11.	Ditto.	-	-	-	-	-	-	-	-	9
	Ditto.	-	-	-	-	-	-	-	-	8
	Ditto.	-	-	-	-	-	-	-	-	8
	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{1}{2}$

N° 12.

Ounces.

N° 12.	-	-	-	-	-	-	11
Ditto.	-	-	-	-	-	-	$8\frac{1}{4}$
Ditto.	-	-	-	-	-	-	$8\frac{1}{2}$
Ditto.	-	-	-	-	-	-	$8\frac{1}{2}$
Average,	-	-	-	-	-	$8\frac{1}{2}$	

MAY.

Product in N° 1.	-	-	-	-	-	-	7
In N° 2.	-	-	-	-	-	-	$6\frac{1}{2}$
Ditto.	-	-	-	-	-	-	8
Ditto.	-	-	-	-	-	-	7
Ditto.	-	-	-	-	-	-	$7\frac{1}{4}$
In N° 3.	-	-	-	-	-	-	8
Ditto.	-	-	-	-	-	-	8
Ditto.	-	-	-	-	-	-	$8\frac{1}{4}$
Ditto.	-	-	-	-	-	-	7
In N° 4.	-	-	-	-	-	-	$7\frac{1}{4}$
Ditto.	-	-	-	-	-	-	7
Ditto.	-	-	-	-	-	-	$7\frac{1}{4}$
Ditto.	-	-	-	-	-	-	6
In N° 5.	-	-	-	-	-	-	4
Ditto.	-	-	-	-	-	-	4
In N° 6.	-	-	-	-	-	-	$8\frac{1}{4}$
Ditto.	-	-	-	-	-	-	$8\frac{1}{4}$
In N° 7.	-	-	-	-	-	-	11
Ditto.	-	-	-	-	-	-	8
In N° 8.	-	-	-	-	-	-	$7\frac{1}{2}$
Ditto.	-	-	-	-	-	-	9
In N° 9.	-	-	-	-	-	-	$5\frac{1}{2}$
Ditto.	-	-	-	-	-	-	$5\frac{1}{2}$
Ditto.	-	-	-	-	-	-	5
Ditto.	-	-	-	-	-	-	$4\frac{3}{4}$
In N° 10.	-	-	-	-	-	-	$4\frac{3}{4}$
Ditto.	-	-	-	-	-	-	$4\frac{3}{4}$
Ditto.	-	-	-	-	-	-	$4\frac{3}{4}$
Ditto.	-	-	-	-	-	-	4
In N° 11.	-	-	-	-	-	-	$4\frac{1}{2}$
Ditto.	-	-	-	-	-	-	$4\frac{3}{4}$
Ditto.	-	-	-	-	-	-	$3\frac{1}{2}$
Ditto.	-	-	-	-	-	-	$4\frac{1}{2}$

Q₂

In

Ounces.

In N ^o 12.	-	-	-	-	-	-	-	Ounces.
Ditto.	-	-	-	-	-	-	-	5 $\frac{1}{4}$
Ditto.	-	-	-	-	-	-	-	4 $\frac{1}{2}$
Ditto.	-	-	-	-	-	-	-	4 $\frac{1}{2}$
Average,	-	-	-	-	-	-	6	4

JUAN E.

Product in N°	3.	-	-	-	-	-	-	-	-	5 $\frac{1}{2}$
In N°	4.	-	-	-	-	-	-	-	-	5
	Ditto.	-	-	-	-	-	-	-	-	3 $\frac{1}{4}$
In N°	5.	-	-	-	-	-	-	-	-	2 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	2 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	2 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	2
In N°	6.	-	-	-	-	-	-	-	-	7
	Ditto.	-	-	-	-	-	-	-	-	6 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	6
	Ditto.	-	-	-	-	-	-	-	-	3
	Ditto.	-	-	-	-	-	-	-	-	2 $\frac{1}{2}$
In N°	7.	-	-	-	-	-	-	-	-	6
	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{1}{4}$
	Ditto.	-	-	-	-	-	-	-	-	5
In N°	8.	-	-	-	-	-	-	-	-	6 $\frac{1}{4}$
	Ditto.	-	-	-	-	-	-	-	-	5 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	5
	Ditto.	-	-	-	-	-	-	-	-	5
In N°	9.	-	-	-	-	-	-	-	-	4 $\frac{3}{4}$
	Ditto.	-	-	-	-	-	-	-	-	3
	Ditto.	-	-	-	-	-	-	-	-	0
	Ditto.	-	-	-	-	-	-	-	-	0
In N°	10.	-	-	-	-	-	-	-	-	4
	Ditto.	-	-	-	-	-	-	-	-	2 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	1 $\frac{1}{2}$
	Ditto.	-	-	-	-	-	-	-	-	0
In N°	11.	-	-	-	-	-	-	-	-	4
	Ditto.	-	-	-	-	-	-	-	-	3 $\frac{1}{4}$
	Ditto.	-	-	-	-	-	-	-	-	2
	Ditto.	-	-	-	-	-	-	-	-	0

In

In N ^o 12.	-	-	-	-	-	-	3 $\frac{1}{2}$
Ditto.	-	-	-	-	-	-	3
Ditto.	-	-	-	-	-	-	1 $\frac{1}{2}$
Ditto.	-	-	-	-	-	-	0
Average,	-	-	-	-	-	3 $\frac{1}{2}$	

RECAPITULATION.

Average product from the sowings in February.	-	12 $\frac{1}{2}$
In March.	-	11 $\frac{1}{2}$
In April.	-	8 $\frac{1}{2}$
In May.	-	6
In June.	-	3 $\frac{1}{2}$

I apprehend it will not be thought easy even to conceive any thing more decisive than this little table: the reader doubtless knows that the *proportions* of these sums are the point of importance: instead of ounces call them bushels, sacks, or quarters. When a June sowing yields 3 $\frac{1}{2}$ sacks, a February one will yield 12 $\frac{1}{2}$, and so on. But I should observe something on such very early sowing of barley as the month of February, because it is very contrary to all common practice.

These experiments include both a gravelly and a clayey loam; farmers in general occupy all kinds of soil, from dry sands to excessively wet clays: the variations of soil relative to the time of sowing, must never be forgotten. February here appears to be the most beneficial season, but need I observe, that there are many soils which will not admit stirring so early as February; others that will not admit it even till April, without the management is previously concerted with such a view; and that there are some seasons in which no plough can stir in February: all these points should be considered. There is nothing which opens a way to error more than general maxims: exceptions are always so numerous, that they are nearly destructive of such rules. The cases in which barley should be sown so early as February, may I apprehend, be gathered from naming a few: first, When the weather is dry enough to plough the land without the least poaching: this is relative to all sorts of soil. Second, upon those dry, sound, crumbling clays, whether natural, or artificial thro' draining; that by being thrown on to the ridge in autumn, will be ready for ploughing very early in the spring; these soils yield of all others the greatest crops of barley. Third, upon all dry gravels, sandy looms, &c. that admit ploughing during most of the winter. In these

these circumstances, and similar ones, it appears from the preceding experiments, that it is adviseable to sow so early as February: bad weather, such as frosts and snows, succeeding the sowing, are no objection; no weather could be worse than many weeks after several of the preceding seasons, nor have I ever perceived that the corn suffered. Most farmers who live in countries where it is the custom to sow early, must by chance have known their barley fields frozen, or covered with snow; and that without damage. There may certainly be excessively sharp frosts without snow, just as the barley is appearing above ground, that may possibly injure it: I will by no means assert the contrary, but I have never observed it.

But advantageous as very early sowing undoubtedly is, yet there are some wet undrained clays, loams, chalks, &c. that will not admit it; and there are numerous farmers that are in a track of management which excludes it. Land that is to be sown in February, or even March, must have its tillage before that time: it is absolutely requisite to plough and sow immediately in the spring; that is, to give no preparatory spring ploughings; for soils which are apt to be the least moist, will, after one or two spring ploughings, become absolute mud with every heavy shower of rain: and this will be in proportion to the degree of pulverization: consequently, the farmer has the best chance of a dry stirring the first; as rains, which afterwards would make the soil poach, will before it is stirred, have no such effect. I have often been caught with rains in my spring preparation for barley, and yet oftener observed it among my neighbours, and the consequence is always a very late sowing, and infallibly a poor crop.

It is from hence to be concluded, that the true barley husbandry is to get the land into the utmost degree of order intended, by October at farthest, in which month it should be thrown into the narrow ridge, and thoroughly well water-furrowed, that it may lay dry all winter, and be ready for sowing early in the spring: the ploughs, seedsmen, and harrows should then follow each other close, that if rain comes, it may find no land unprepared for it. A farmer should not allow his men to go with the ploughs at a distance from each other; (it is common for the men each to take his acre) but make them go very near, that the field may not in case of bad weather, be left in stripes, part sown and part unsown, with the water-furrows open in one place and choaked up in another: it is a common error but a very pernicious one.

According to the husbandry here proposed, the farmer if he will continue to take a crop of barley after one of any other grain, should give the tillage

tillage immediately after harvest, and ridge up the land as I have just described, in October: but the common method is very contrary; they leave the field in stubble all winter, for the paltry consideration of feeding sheep, delay the tillage 'till spring, and consequently sow late; whatever their crop, we may pronounce it trifling to what it would be with different management.

The greatest crops of barley gained in England are in clay soils, well drained, that have a year's fallow, are ridged up in October, the manure carried on the first hard frost, and ploughed and sown, as soon as dry enough, which is the end of February or the first fortnight in March.

To argue against sowing barley after turneps would be absurd, but the turnep husbandry by no means allows of a good barley culture. There will be no difficulty in proving this satisfactorily to all my readers.

Turneps, not a proper preparation for barley! That is very strange! cries an hundred people who have seen the barley following turneps fed off by sheep. I reply, that the manuring from the sheep, which by the way exceeds most others, here gives the great crop of barley, not the turnep preparation. It would be anticipating my subject to offer to prove this at present by experiment, but reason will do it alone. Those who argue so strenuously for this common management, should view the barley crops which succeed turneps when they are not fed off; does the prospect shew that it is the turneps or the sheep that occasion the great crop of barley? In order for the comparison, take a field half sown with turneps, and half fallow, or any crop that exactly equals the turneps, let them be fed off the land with sheep, and the other half manured to the exact equality of that of sheep; is it supposed that the latter barley will not equal the former? If on heavy lands it follows a fallow, it will most assuredly exceed it. But farther: suppose the turneps on account of the flock are kept, as they commonly are, till the end of March, or throughout April, what will the result be then? Why the barley will be inferior by a third to the other that is not prevented from being sown earlier. It is a fact that cannot be disputed, that the very best turnep culture of barley in the most kindly soils in England: witness for instance the best marled lands in Norfolk, the crop fed off with sheep, do not near equal the product of barley, from summer-fallowed clays, manured in a common way, with farm-yard dung, and sown so much earlier than the turneps will allow. Four quarters are a great crop in the best parts of Norfolk, they have sometimes five; whereas in Essex, drained clays, six quarters are a common crop, and eight often gained.

The great use of turneps are in January, February, March and April: the farmers that have great flocks keep them as late as possible: in other words,

words, they are not off the land, when the barley ought to be green as a meadow. How is it possible such a culture can be comparatively advantageous to barley? When turneps are kept so late I should apprehend it would be a particular advantage to let some other crop succeed them, that will bear sowing much later than barley. Quære, for instance, if such a crop of buck wheat as would be gained on turnep land in fine order, would not much exceed in value, the common barley crops that follow turneps? If it is considered how little buck wheat exhausts the soil, I have no doubt of the point.

Upon the whole, the preceding experiments prove, that the grand object in the culture of barley is to sow early; and consequently that a farmer, whatever be his soil or plan, should, if barley is his chief, or an important aim with him, so prepare his land as to admit sowing on the first spring earth, whether the season allows it in February or in March, but later he should not venture to sow: at least on such soils as mine. The gaining good crops in April, or even May sowings, does not prove the contrary, as such events must be owing to extraordinary natural or artificial fertility: which would yield proportionably greater crops were the season of sowing more advantageous.

S E C T.

S E C T VI.

MISCELLANEOUS EXPERIMENTS.

WHOEVER conducts a great variety of experiments, will naturally fall into the trial of many that are rather those of curiosity than acknowledged utility : but sometimes experiments which are tried, one scarcely knows why, turn out of a very unexpected use. They suggest hints, which, when properly pursued, lead to objects of great and undoubted importance : I shall insert in this section a few trials which I do not pretend to offer as of importance, singly considered, but which may be of use if extended by others ; and I shall venture this the reader, as I do not propose to insert near all those I tried, which are too numerous for a work which already frightens me with its voluminousness.

S T E E P S.

EXPERIMENT N^o 1.

Marked some drills a perch long, the end of April 1765, on a piece of fallow in field L*, and sowed each with two ounces of barley prepared in the following manner,

- N^o 1. Steeped 24 hours in a brine of common salt, strong enough to bear an egg, and then dried with lime.
2. Steeped 24 hours in a mixture of bullocks blood, and the drainings of a horse-dunghill, and dried with lime.
3. Steeped 24 hours in urine, and dried with lime.
4. Not steeped at all.

Every article of management were the same : The produce,

		Ounces.
N ^o 1.	-	8 $\frac{1}{2}$
2.	-	8 $\frac{1}{2}$
3.	-	8 $\frac{1}{2}$
4.	-	8 $\frac{1}{2}$

Not the least difference in the quantity of the grain.

From this experiment I conclude, that steeps are not of any consequence; I do not at present recollect any writer that recommends them for barley; however, I thought it no impropriety to try their efficacy, that the truth might be known; lest some future theorist might arise to promise mountains of gold from the use of nostrums.

EXPERIMENT N^o 2.

In April 1766, marked some drills on a piece of turnep-land, and sowed each with two ounces of barley, prepared in the following manner:

- N^o 1. Steeped 24 hours in a common salt brine, strong enough to bear an egg, and dried with lime.
2. Ditto 12 hours.
3. Ditto in bullocks blood 24 hours, and dried with lime.
4. Ditto in urine 24 hours, and dried with lime.
5. Ditto in brine of salt-petre 24 hours, and dried with lime.
6. Ditto in a mixture, half and half, of urine and bullocks blood 24 hours, and dried with lime.
7. Ditto in the drainings of a horse-dunghill 24 hours.
8. Ditto in a lye of common salt and lime, 24 hours, and dried with lime.
9. Ditto in a lye of pigeon's dung 24 hours, and dried with lime.
10. Ditto in a lye of wood ashes 24 hours, and dried with lime.
11. No steep.

Culture and management in all respects equal: The produce as follows,

		Ounces.
N ^o 1.	-	8 $\frac{1}{2}$
2.	-	8 $\frac{1}{2}$
3.	-	7 $\frac{1}{2}$
4.	-	8 $\frac{1}{4}$
5.	-	8 $\frac{1}{4}$
6.	-	8 $\frac{1}{2}$
7.	-	8 $\frac{1}{2}$
		8.

	Ounces.
8. - - - - -	8 $\frac{3}{4}$
9. - - - - -	8 $\frac{1}{4}$
10. - - - - -	8 $\frac{1}{2}$
11. - - - - -	8 $\frac{1}{2}$

The grain in general perfectly equal; but N° 4, 6, and 9, had each of them two burnt ears: but I consider the quality as complete.

This experiment confirms the preceding, and gives much reason for supposing the effects of steeps a mere nothing.

EXPERIMENT N° 3.

The last week in April 1767, marked in field M* some drills on a piece of potatoe-land, and sowed each with two ounces of barley, prepared as follows:

- N° 1. Steeped 24 hours in urine, and dried with lime
2. Steeped 24 hours in common salt brine, very strong, and dried with lime.
3. Steeped 24 hours in the drainings of a horse-dunghill, and dried with lime.
4. Steeped 24 hours in a lye made of pigeons dung and salt petre, soaked in urine, and dried with lime.
5. Steeped 24 hours in a mixture of strong common salt brine, and bullocks blood, and dried with lime.
6. Steeped 24 hours in a lye made of wood ashes and urine, and dried with lime.
7. Not steeped at all.

The culture and management in every respect the same: The produce as follows,

	Ounces.
N° 1. - - - - -	7 $\frac{1}{2}$
2. - - - - -	7 $\frac{1}{2}$
3. - - - - -	7 $\frac{1}{4}$
4. - - - - -	7 $\frac{1}{2}$
5. - - - - -	7 $\frac{3}{4}$
6. - - - - -	7 $\frac{1}{2}$
7. - - - - -	7 $\frac{1}{2}$

Not the least difference in the quality of the grain.

This trial is a fresh proof that steeps have no effect on barley.

OBSERVATIONS.

If a man of any ingenuity was merely from theory to attempt a dissertation on the efficacy of steeping feed-corn, he would probably bring a great variety of reasons in their favour extremely probable. To suppose it a matter of consequence that the first tendency of the seed to germinate should be called forth by a rich steep rather than a poor watery soil, sounds extremely plausible; but we find from experiment, that agreeable as it may seem in theory, it by no means answers in practice. The circumstances attending the first sprouting of the seed, or its bursting from repletion, are not of so much consequence to the crop as the young roots finding plenty of vegetable food. Supposing the effect of steeps ever so great, they could not affect the plant, when a quarter or half grown. Let the grain be steeped in whatever it may, and the first vegetation ever so luxuriant, yet if the roots do not as they spread draw plenty of nourishment from their pasture, the vegetable must decline. But suppose a plant, very wretched in its first appearance, transplant it into a rich mould, and you will at once see how little its flourishing depended on the first state and sprouting of the seed.

CHANGE OF SEED.

Marked in field L*, about the middle of April 1764, some square perches of fallow, and sowed them with the following sorts of barley, each half a pint of seed.

- N° 1. With common feed bought of a neighbour: it was raised on a clay soil.
 2. With ditto, raised on a gravelly soil.
 3. With Fulham barley.
 4. With Zealand ditto.

The culture and management in every respect the same. The produce as follows:

N° 1.	3½ quarts, or <i>per</i> acre 2 quarters 1 peck.	- -	Value 19 s.
2.	3½ ditto,	- - - -	Value 21 s.
3.	3 ditto, or <i>per</i> acre 1 quarter 7 bushels.	- -	Value 18 s. 6 d.
4.	3 ditto,	- - - -	Value 19 s.

From this result one would imagine, that the change of the sort of barley not a point of consequence; but that a change of the soil had great effects. I know not what soil the latter sorts were raised on: this is

is a defect in the experiment which I must attempt to remedy in future years.

EXPERIMENT N° 5.

In field M* marked, in April 1764, some perches of turnep-land, and sowed each with a pint and a half of barley, as under:

- N° 1. With common barley raised in the parish on clay.
2. With ditto raised on a gravelly loam.
3. With ditto from a sandy soil in Norfolk.
4. With Fulham barley: soil unknown.
5. With Zealand ditto: soil unknown.

Management in every respect similar. The produce as follows:

N° 1.	3½ quarts, or per acre 2 quarters 1 peck.	- -	Value 20s.
2.	3 quarts, or per acre 1 quarter 7 bushels.	- -	Value 19s.
3.	3 quarts.	- - - -	Value 19s.
4.	3 ditto.	- - - -	Value 19s. 6d.
5.	3½ ditto.	- - - -	Value 19s.

The clearest point in this result is the superiority of the barley known to be raised on clay. This gives us fresh reason to suppose that a change of soil is the most important matter to be attended to in the point of seed. The variations in the rest of the trial are such, that one scarcely knows what to make of them.

EXPERIMENT N° 7.

In April 1765, marked in field L* some perches of fallow, and sowed each with a pint and a half of barley, as follows:

- N° 1. With common barley raised in the neighbourhood on a clay soil.
2. Ditto raised on a gravelly loam.
3. Common barley raised in a sandy field in Norfolk.
4. Ditto raised on a clay in Cambridgeshire.
5. Fulham barley raised on clay.
6. Zealand ditto raised on sand.
7. Ditto on clay.
8. Common raised last year in this field.

The culture and management were in every respect the same. The produce as follows:

N° 1.

N ^o 1.	3 quarts, or <i>per</i> acre 1 quarter 7 bushels.	- -	Value 22s. 6d.
2.	3½ ditto, or <i>per</i> acre 2 quarters 1 peck.	- -	Value 23s. 6d.
3.	3 ditto, or <i>per</i> acre 1 quarter 7 bushels.	- -	Value 23s.
4.	3 ditto,	- -	Value 23s.
5.	3 ditto,	- -	Value 23s.
6.	3½ ditto.	- -	Value 22s.
7.	3 ditto.	- -	Value 21s.

This result is not, upon the whole, so satisfactory as I could wish; however, I think it farther confirms the idea suggested by the former ones, that change of soil is of more consequence than a change in the kind of barley. The greatest products are from seed raised on sand and gravel, and the smallest from the barley raised in the same field.

EXPERIMENT N^o 8.

Marked in field M*, the middle of April 1766, some square perches of turnep-land, and sowed each of them with a pint and a half of the following sorts of barley:

- N^o 1. With common barley raised two successive years in this field.
 2. With ditto raised one year in ditto.
 3. With ditto from a Norfolk sand.
 4. With ditto from a clay field in Essex.
 5. With Zealand barley from a sandy field about ten miles distant.
 6. With ditto from a clay-field in Essex.
 7. With Fulham barley raised last year on a clayey loam in this farm.
 8. With ditto raised last year on this field.
 9. With exceedingly fine, plump and bright common barley, raised on a neighbour's light loam.
 10. With very poor and shrivelled ditto raised on a neighbouring light loam.

The management perfectly similar. Produce as follows:

N ^o 1.	1 quart 1½ pint, or <i>per</i> acre 1 quarter 3 pecks.	-	Value 23s. 6d.
2.	2 quarts ½ pint, or <i>per</i> acre 1 qr. 3 b. and 1 p.	-	Value 24s. 6d.
3.	3 quarts, or <i>per</i> acre 1 quarter 7 bushels.	- -	Value 25s. 6d.
4.	3½ ditto, or <i>per</i> acre 2 quarters 1 peck.	- -	Value 26s.
5.	3 quarts.	- -	Value 25s. 6d.
6.	3 quarts.	- -	Value 25s. 6d.
7.	3½ ditto.	- -	Value 26s.
8.	1 quart 1½ pint, or <i>per</i> acre 1 quarter 3 pecks.	-	Value 23s.

9. 3 quarts.	-	-	-	-	-	Value 26 s.
10. 3 quarts.	-	-	-	-	-	Value 24 s. 6 d.

This experiment is, in several respects, very satisfactory. We find by it that on this gravelly loam the greatest products are from the seed raised on sand and clay; and that the poorest crops are from the seed twice before sown in the same field, and Fulham barley sown before in this field also. Zealand barley from sand and clay are exactly equal, which shews the change of soil strongly. Good common seed ranks high in quantity and value: bad seed equals it in quantity, but is much inferior in value.

EXPERIMENT N^o 9.

Marked some square perches in field L*, on fallow land, and sowed them the first week in April 1767, each with one and an half pint of seed of the following sorts.

- N^o 1. With common barley raised three successive years in this field.
2. With ditto raised two ditto ditto.
3. With ditto raised last year in this field.
4. With Fulham barley raised three successive years in this field.
5. With ditto raised two successive years in ditto.
6. With Zealand barley raised three years in this field.
7. With ditto raised two ditto.
8. With common barley from clay in Essex.
9. With ditto from sand in Norfolk.
10. With ditto from Kent.
11. With ditto excellent fine plump grain, raised on a gravel in the neighbourhood.
12. With ditto very bad and shrivelled grain from ditto.

Culture and management perfectly alike: The produce,

N ^o 1.	1 quart $1\frac{1}{2}$ pint, or <i>per</i> acre 1 quart and 3 pecks.	Value 19 s.
2.	2 quarts $\frac{1}{2}$ pint, or <i>per</i> acre 1 qr. 3 b. 1 p.	Value 21 s.
3.	2 quarts $1\frac{1}{2}$ pint, or <i>per</i> acre 1 qr. 5 b. 3 p.	Value 24 s.
4.	1 quart 1 pint, or <i>per</i> acre 7 bushels and $\frac{1}{2}$ -	Value 18 s. 6 d.
5.	2 quarts, or <i>per</i> acre 1 quarter 2 bushels. -	Value 20 s. 6 d.
6.	1 quart $1\frac{1}{2}$ pint, or <i>per</i> acre 1 quarter 3 pecks.	Value 22 s.
7.	2 quarts. - - - - -	Value 24 s.
8.	2 quarts $1\frac{1}{2}$ or <i>per</i> acre 1 qr. 5 b. 3 p. -	Value 23 s.

9.	3 quarts, or <i>per</i> acre 1 quarter 7 bushels.	-	Value 25 s. 6 d.
10.	Ditto, ditto, ditto.		
11.	3 quarts 1 pint, or <i>per</i> acre 2 qr. 1 b. 2 p.		Value 22 s. 6 d.
12.	2 quarts 1 pint, or <i>per</i> acre 1 qr. 4 b. $\frac{1}{2}$.	-	Value 21 s.

In this experiment a change of soil is the most material circumstance, both for gaining a larger comparative produce and better in quality. Seed that has been for two or three years successively produced on the same ground is very bad. Good seed much exceeds bad, indeed in a greater proportion than I should have conceived: a different sort of barley, or brought from a distance, are circumstances that do not seem to be attended with any good effect.

OBSERVATIONS.

From these few experiments it appears, that a farmer should be particularly attentive to two circumstances respecting his seed-barley; first, that it is raised on a different soil from that on which he designs to sow it. If he sows on clay or loam, let him procure his seed from sand or gravel; and *vice versa*. Secondly, he should chuse the plumpest, weightiest, brighest, and in short, best grain he can get, and not be solitious, as many are, to procure the smallest grained corn, that there may be the greater number in a bushel. These should be his objects; as to change from a distance, or of sort, they appear to be of no avail.

EXPERIMENTS OF CURIOSITY.

That I might discover to what perfection it was possible to carry the culture of barley, without regard to expence, I tried the following experiments.

EXPERIMENT N° 10.

In March 1765, marked a square perch in field L*, and dug it out to the depth of 1 foot, throwing the moulds every way around it. When this was finished, the clods were all chopped into very fine pieces; and the whole mixed up with five bushels of coal-ashes, five of fowls dung, and ten of rotten farm-yard dung; in a few days after it was thrown back into the hole, spread level, and planted with common barley in single grains, about three inches square, after which nothing more was done with it till mowing. It came up and flourished with great luxuriance, insomuch that it was laid almost flat to the ground before harvest, notwithstanding the extreme dryness of the season. When it was mown,
much

much of it was rotten against the ground, however, it was threshed directly, and the produce was two bushels and one quart; that is, *per* acre ten quarters five bushels. I am confident that had it supported itself, the crop would have been much more considerable. The quality of the grain neither good nor bad. The expence *per* acre of this culture amounts to about 40/.

I will not pretend to assert that there is a manifest utility in such a trial as this; because a method of culture that cannot pay charges, is palpably absurd; but yet it shews, that the product of barley in all common crops, is by no means the utmost exertion of the grain, but a mere proportion to natural, or the common degree of artificial fertility; nor does any part of common management prove, or even give us reason to suppose, that the product would not be much greater from an increase of fertility. Ten quarters of barley *per* acre have been gained over a whole field in this neighbourhood, with very excellent management: this proves that the common farmer's practice is far enough from perfection; and that an increase of fertility would to a very high degree, be attended with an increase of crop: I have tried other experiments on this point, and shall vary them much in future; but they will be inserted under another head.

EXPERIMENT N° II.

In June 1765, marked a square perch in field L*, dug it two feet deep and threw out the moulds around it. In July chopped the clods fine, and mixed the heap with five bushels of coal ashes, five of mortar rubbish, five of hog dung, and five of rotten farm-yard dung: In August turned it over, and mixed twenty bushels more of rotten farm-yard dung: In September mixed the heap again: In November cut a trench from the perch to a ditch to carry the water from it, and to keep it dry during the winter: In April 1766 turned the heap into the hole and spreading it level, planted it with common barley, a grain to every square of four inches. A few rank weeds arose with the corn, which were plucked out. The most luxuriant growth of it induced me to do every thing to keep the barley from falling to the ground: I drove down four stakes at the corner of the square, (in the manner before described for wheat) and strained over the corn a common net, eight inches from the ground. The barley was quickly through it, and I found the necessity of adding another eight inches higher. The blades shot through it, and the nets were presently hid: By these means the barley was kept perfectly supported, the heads at harvest only bending different ways. About a fortnight before it was cut it was attacked by the mildew, insomuch that I was afraid my crop would be nearly spoiled; it was mown the first week in September, and the produce three bushels, or *per* acre fifteen quarters;

the quality of seed but indifferent. The expence *per* acre of this culture would be about 133 *l*.

The mildew certainly was of much prejudice to this crop; and as there were several adjoining crops that did not suffer at all, it must be attributed to the rankness of the growth of this barley, a circumstance I have observed more than once before: however the product is very great, and shews how much the world is yet short of perfection in the culture even of common vegetables.

Quere in what manner is a farmer to extend this operose cultivation to whole fields, so as to be a gainer? Undoubtedly by a union of every part of good husbandry: I may be mistaken, but to me it appears that ten quarters gained throughout a whole field with considerable profit, is a more extraordinary spectacle than these fifteen quarters.

EXPERIMENT N^o. 12.

In May 1766, marked a square perch in field L*, and dug it out to the depth of two feet, throwing the moulds around the hole; chopped all the clods fine, and in a fortnight mixed the heap with twenty bushels of rotten farm-yard dung. The end of June passed the whole through a wire sieve. The middle of July added ten bushels of lime to the heap, and passed it again through a sieve. In August added ten bushels of coal ashes to the heap, and passed it again through the sieve. In October drained the hole, laying it quite dry all the winter; the latter end of February 1767, added ten bushels of lime more to the heap, and mixing the whole together, threw it into the hole and levelled it; then planted it with barley, a grain to every square of three inches. Netted it in the same manner as the last experiment. It escaped the mildew and mown the last week in August; produce three bushels two pecks and an half, or *per* acre eighteen quarters one bushel: the grain extremely good.

What improvements might be added to this culture is not an enquiry to be made here: but supposing eighteen quarters to be the utmost product that can be had from one acre of land; yet, what a vast journey have our farmers to take before they arrive upon an average half way to the goal! Much of this produce is doubtless the result of expences that cannot possibly be repaid the first crop; but it is as clear, that a vast crop compared to common ones may be gained *profitably*. That, I have already mentioned of ten quarters *per* acre a large field through, is a pregnant instance. I cannot but apprehend that ten or twelve quarters might be the average produce of common husbandry; how much therefore is it to be regretted that a more spirited attention is not given to carry the products of the earth to the highest pitch! The expence *per* acre of the culture minuted in this experiment is about 263 *l*.

S E C T.

S E C T. VII.

GENERAL REMARKS ON the CULTURE of BARLEY.

IT is a notion common in this part of the country, that we have very little land that deserves the name of a true barley soil. Our farmers are apt to turn their eyes towards what they call the *fielding* country; that is, the open parts of Suffolk and Norfolk, and the fine marled tracts in the latter: these they call the right turnep and barley-land. But I have great reason to believe, from the preceding experiments, that were our farms large enough to maintain great flocks of sheep for the feeding off the turneps in good time, that their crops of barley would be much superior to those of Norfolk. In the present case, the fields that are managed in the best manner, and tolerably manured from the farm-yard, or the town of Bury, much exceed any fields in Norfolk in their produce: and in some parts of Essex the crops they get from well-drained clays are nearly, if not quite double, the Norfolk ones. From hence I conjecture, that our soil, when managed as it undoubtedly ought to be, is equal to most in the production of this grain. This state of the case is against my common husbandry, which yielded so small a profit as 4s. 8 $\frac{1}{4}$ d. *per* acre on an average; but let the reader remember that my plan was (whether justly or not, is not the question here) to preserve the chief of my farm-yard manure (which I made in uncommon quantities) in compost heaps, mixed with turf-clay and ditch-earth, until I had a large stock, so as to manure a large field every year with a compost two years old. And as I left the farm unexpectedly, I also left many great heaps of such manure, that in future years would, it is presumed, have rendered the following crops very different. I hint this only to shew that the smallness of my common crops is no proof against the merit of the soil.

The comparison between the common ones and those managed in a more perfect manner, proves the same; and likewise, that no farmer on such soils should attempt the culture of barley in such common method. The average profit *per* acre of the improved crops is 2 l. 7 s. 2 d. a very great sum, when it is considered that many of them were gained at an expence of from 12 to 20 l. *per* acre; consequently the soil must be left in most excellent state for following crops. Such a profit is very great, and highly worth the aim of a farmer; whereas 4 s. 8 $\frac{1}{4}$ d. is but another word for loss.

This lesson is only an assurance to the farmer from experience, that the true barley culture at large, upon such soils as are here specified, is to sow no more land than is in excellent order, clean from weeds, and well manured. If the common course of crops on a farm require the sowing fifty acres of barley, let twenty be substituted in the stead of them, and the extra tillage on the barley account, and the manuring, be all applied to twenty. According to the proportion of the preceding comparison, one acre in complete culture yields as great a profit as ten in the common; consequently where fifty acres are proposed, only five should be sown, and the remaining forty-five applied to other uses, either in the production of crops that do not require so much tillage and manure as barley, or else kept fallowing for such crops as the season may render adviseable to sow.

These observations, it is true, are but general reasoning; but they are deduced from experiments so directly as to be rather facts than argument: and it is one grand use of experiment, to become the foundation of reasoning. In all matters of husbandry there is no danger in trusting to the dictates of reason, provided it *succeeds* experiment: but if reasoning goes before experiment, it can lead to little else but error.

In the next place, we find, from these experiments, that the new husbandry is totally unfit for the culture of barley, in whatever manner used. This result is very contrary to the ideas and the positive assertions of many writers; but either those writers did not attend minutely to the conduct of their experiments, or their soil has been very different from the two sorts whereon these trials have been made; or, lastly, their superior skill and ingenuity gave them advantages which it is certain I have never enjoyed. This latter circumstance should be struck out of the question; for as the merit of a mode of husbandry is not dependent on the practice of gentlemen, if it cannot be adopted by common farmers, it is absolutely worthless; and I think I may flatter myself that I gave the drill-culture at least as fair a trial as any common farmer could do. The loss on my experiments on drilled barley
amounts

amounts on an average to 11. 10s. 8d. *per* acre; and the ballance of the comparison between the old and new methods is 11. 18s. 9½d. *per* acre in favour of the former. I think no comparison can well be more decisive.

In respect to *quantity of seed*, the preceding trials determine it with no slight clearness upon the soils of this farm, *viz.* clayey and gravelly loams. In the broad-cast method of sowing on land of moderate fertility, without manuring, five bushels *per* acre are the most advantageous quantity, upon an average of many variations; and with manuring, three bushels.

This is a part of husbandry-knowledge which I esteem myself very happy in being able to lay before the public: for no book which I have yet perused contains the least trace of instruction drawn from actual experiment. In the conduct of my own farm at large, I followed sometimes the common practice of the neighbouring farmers, and at others the directions and ideas I met with in books. I sowed four bushels in consequence of the first, and two in pursuance of the other. Both were wrong; and these errors lost me, in the course of these five years, no trifling sum of money. I have since profited of my trials in small, and sown more advantageous quantities.

The importance of proportioning the seed to the degree of the soil's fertility appears extremely evident in the difference between three and five bushels, the quantities for manured and unmanured land. This is an object which has totally escaped the common farmers in all the countries with which I am acquainted, have read or heard of. Their quantities are extremely various, and frequently with no apparent reason; but the same is used for both rich and poor lands, manured and unmanured ones. Some few exceptions may possibly be found to this assertion; but I am confident they are extremely rare. I have, however, proved the conduct to be big with absurdity. If the common husbandmen would make the most of their land, let them attend to this circumstance; they cannot fail of profiting by it.

Those who through curiosity may practise the drill-culture of barley, may, in these trials, see that for horse-hoed crops, under several variations, two bushels, or two and an half, are the most beneficial portions for an acre of land; for equally distant rows from three to three and an half.

The experiments on the *time of sowing* yield several points of knowledge not undeserving the attention of common farmers. It is proved that the earlier the corn is sown, the better is the crop, provided the soil is dry enough to admit ploughing without poaching; and that this
general

general rule holds good under many variations, in opposition to the effects of much extraordinary tillage. From hence the industrious husbandman may learn to improve his crops considerably, and at the same time save much expence: but for the common culture of barley, respecting the time of sowing, some alterations must be made in several parts of the common conduct; but such instructions are by no means the result of these experiments alone; they are perfectly consistent with the *common* practice of several tracts of country very famous for the production of extraordinary crops of barley.

The preceding experiments farther inform us, that the use of steep is a mere piece of nonsense: barley requires none.

Change of seed from a distance, much recommended by several writers, has by no means, in these trials, any effect that recommends the practice, any more than changing the kind of seed; but varying the soil is proved to be of much importance.

The experiments of mere curiosity have this merit in the view of utility; they teach us that this grain is capable, by means of great exertions of culture, of producing prodigious crops, to the amount of four or perhaps five times the product of common good ones: a circumstance that should animate all spirited cultivators to aim, by every means in their power, to carry the *profitable* culture to its perfection: a point of vast importance, as it is plain that immense crops of this grain depend only on excellent culture. I mean these trials but as hints to the intelligent.

C H A P. III.

Of O A T S.

THIS grain though not of the importance of either wheat or barley, is in such demand from the number of horses every where kept, that it forms a part of every farmer's crop, I apprehend, in the kingdom; it should therefore by no means be neglected by the tryer of experiments. Indeed it is an opinion not uncommonly met with, that the extended culture of oats is a nuisance, from occupying land which would produce more valuable crops: horses it is urged are unnecessary, as oxen would do all the work of it, and eat no oats. This is by no means a proper place to enquire into the justness of these remarks, for if it is fully allowed, yet many oats must be ever raised to feed those horses whose use cannot be supplied by oxen; and if their production should be confined, it highly becomes speculative men to devise means for reducing the quantity of land sown, by making one acre yield as much as three.

The experiments I have made on this grain are of the same nature as those on wheat and barley; they are therefore to be arranged in the same manner. I begin with the common culture.

S E C T.

S E C T. I.

CULTURE and PRODUCE in the Old Method.

I Have already remarked more than once, that in the beginning of my practice I had no guides but my bailiff and my books, and that the former preceded the latter; the man, though sensible, and for the most part unprejudiced, naturally threw me into the common management he had been used to; one point of which was, to buy as little as possible, but raise every thing I wanted at home; in many cases a good maxim, when a farm is large and brought into complete order, but a very bad one for setting out. Thus in the case of oats, the reader will perceive that I sowed them when I undoubtedly ought to have let it alone. This circumstance, and the deficiency of manure before mentioned, will account for most, if not all the poor crops to be met with in this section.

EXPERIMENT N° I.

Expences and produce of four acres and an half field R* 1763.

CULTURE.

This field was part of the farm I took at Lady Day, and as the farmer ploughed and sowed it, I can give no particular account of the culture. In 1759 it was cropped with barley. In 1760 pease. In 1761 turnips. In 1762 barley.

EXPENCES.

One ploughing.	0	4	6
Two harrowings.	0	1	0
Seed.	1	16	0
			Sowing.

	£.	s.	d.
Sowing,	0	2	3
Mowing,	0	5	3
Harvesting,	0	12	0
Threshing,	0	18	0
	<hr/>		
Rent, &c.	3	19	0
	3	16	6
	<hr/>		
	7	15	6

PRODUCE.

18 Quarters,	14	8	0
Expences,	7	15	6
	<hr/>		
Profit 1 l. 9 s. 5 d. <i>per</i> acre.	6	12	6

	£.	s.	d.
Ploughing,	0	6	9
Harrowing,	0	2	3
Carting in harvest,	0	1	9½
	<hr/>		
	0	10	9½
	<hr/>		
Profit 1 l. 7 s. 0 d. ½ <i>per</i> acre,	6	1	8½

OBSERVATIONS.

Four quarters *per* acre are, in this neighbourhood, reckoned a good crop, and not very usual for a second. The soil is extremely well adapted to spring corn, and the season proving wet was a great advantage to it, being dry gravelly land. It is supposed by many, that nothing is gained by taking two crops without an intervening fallow or fallow-crop; but this experiment inclines one to the contrary opinion in good seasons; four quarters *per* acre being a fine crop, and this kind of land bearing admirable turneps in any course of husbandry, renders a fallow quite unnecessary.

EXPERIMENT N° 2.

Culture, expences, and produce of three acres field U, 1764.

CULTURE.

This field in 1759 was cropped with barley. In 1760 oats. In 1761 clover. In 1762 wheat. In 1763 turneps.

Gave the land but one ploughing after the turneps, (for which crop part of it was dunged 15 loads *per* acre) throwing it into arched stacks and sowed the white oats the 28th of April.

EXPENCES.

	£.	s.	d.
1 Quarter 4 bushels seed,	1	11	6
Sowing,	0	1	6
Ploughing,	0	3	0
Harrowing,	0	1	0
Mowing and harvesting,	0	6	0
Water furrowing,	0	3	6
Threshing,	0	8	0
	2	14	6
Rent, &c.	2	11	0
	5	5	6

PRODUCE.

6 quarters at 9 s.	5	8	0
Expences,	5	5	6
Profit 10 d. per acre.	0	2	6

	£.	s.	d.
Ploughing,	0	4	6
Harrowing,	0	2	3
Carting in harvest,	0	1	2 $\frac{1}{4}$
	0	7	11 $\frac{1}{4}$
The above profit,	0	2	6
Loss 1 s. 9 d. $\frac{3}{4}$ <i>per</i> acre,	0	5	5 $\frac{1}{4}$

OBSERVATIONS.

A crop of spring corn following turneps, is the best of husbandry. These turneps were well hoed, and as I have mentioned, part of them dunged, yet in return, the poor crop of 2 quarters *per* acre. To account for this ill success we must refer to the description of the field: the excessive wetness of the season poisoned this flat piece of land, washed away all the virtue of the dung, and greatly damaged the crop of oats. At the time of sowing the corn, clover was sowed also, but whether the

feed

feed was bad, or full of those of weeds, or to whatever other cause I must attribute it, the soil after the oats were carried off was in wretched condition; full of pernicious weeds and no great number of clover plants. A summer fallow which would have admitted the lands being laid up dry in the winter, in all probability had been attended with much better success.

EXPERIMENT N° 3.

Culture, expences, and produce of two acres, part of field P, 1764.

CULTURE.

This piece was sown with lucerne in drills in 1763, but failed. I gave it three ploughings besides harrowings, and on the 23d of April sowed it with six bushels of white oats. Cleared them from the field the 25th of August, being four waggon loads.

EXPENCES.

	£.	s.	d.
Seed, - - - - -	0	13	6
Sowing, - - - - -	0	0	6
3 Clean earths, - - - - -	0	6	0
2 Harrowings, - - - - -	0	1	0
Harvesting and mowing, - - - - -	0	4	6
Threshing, - - - - -	0	16	8
	<hr/>		
	2	2	2
Rent, &c. - - - - -	1	14	0
	<hr/>		
	3	16	2

PRODUCE.

12 quarters 4 bushels at 17 s. 6 d. - - - - -	10	18	9
Expences, - - - - -	3	16	2
	<hr/>		
Profit 3 l. 11 s. 3 d. $\frac{1}{2}$ per acre, - - - - -	7	2	7
	<hr/>		
Ploughing, - - - - -	0	9	0
Harrowing, - - - - -	0	1	0
Carting in harvest, - - - - -	0	0	7 $\frac{1}{2}$
	<hr/>		
	0	10	7 $\frac{1}{2}$
	<hr/>		
Clear profit 3 l. 5 s. 11 d. $\frac{3}{4}$ per acre - - - - -	6	11	11 $\frac{1}{2}$

OBSERVATIONS.

Many circumstances combined to render this an exceeding good crop. The land very suitable to spring corn, and in great heart, the lucerne was perpetually hoed, insomuch that I value it nearly as a summer fallow; a strong argument for fallow crops! nor was the course of crops before unfavourable. The wetness of the season was not prejudicial to this fine light soil: the high price oats yielded, raised the profit greatly; but at the time these were cleared from the barn, the best sold for 9 s. 9 d. and 10 s. but the grain of these was small, and not of a bright colour, owing to the rain which fell on them after they were cut.

EXPERIMENT N° 4.

Culture, expences and produce of six acres, fields Q and G*, 1764.

CULTURE.

In 1759 this field was fallow. In 1760 wheat. In 1761 oats and pease. In 1762 fallow. In 1763 wheat.

The wheat stubble was turned in in November, and it was sowed with two quarters seven bushels of black oats the 20th of April.

EXPENCES.

	£.	s.	d.
Seed at 16 s. 6 d.	2	7	3
Ploughing,	0	12	0
Harrowing,	0	2	0
Weeding,	0	14	0
Mowing and harvesting,	1	4	6
Threshing 17 quarters 5 bushels,	1	3	6
	6	3	3
Rent, &c.	5	19	0
	12	2	3

PRODUCE.

17 quarters 5 bushels at 15 s. 6 d.	13	5	0
Expences,	12	2	3
Profit 3 s. 3 d. per acre,	1	2	9
	Ploughing		

	£.	s.	d.
Ploughing, - - - - -	0	18	0
Harrowing, - - - - -	0	3	0
Carting in harvest, - - - - -	0	1	10½
	<hr/>		
The above profit, - - - - -	1	2	10½
	<hr/>		
Loss, - - - - -	0	0	1½
	<hr/>		

OBSERVATIONS.

It was miserable husbandry to crop this field with oats after the wheat; and giving it at the same time so little culture, was necessarily running it quite out of heart, and filling it with weeds; this occasioned the expence of the weeding, which was nothing more than hooking the more rampant thistles: under these circumstances two quarters and an half per acre were a better crop than I had reason to expect, and would not have been attended with so little profit, but the expences on it ran higher than they in general do.

EXPERIMENT N° 5.

Culture, expences, and produce of ten acres, part of field T, 1765.

CULTURE.

The barley stubble was turned up November 8th, 1764; during that winter the wettest part of the field was hollow drained. April 29, 1765, it received the first spring ploughing. May 3d harrowed it. Between the 7th and 11th ploughed, sowed, and harrowed it. August 22d they were mown; and carried between the 2d and 5th of September, amounting in the straw to ten loads.

	EXPENCES.	£.	s.	d.
Ploughing, - - - - -	- - - - -	1	10	0
Harrowing, - - - - -	- - - - -	0	5	0
Rolling, - - - - -	- - - - -	0	2	0
Seed 5 quarter 4 bushels at 15 s. - - - - -	- - - - -	4	2	6
Water furrowing, - - - - -	- - - - -	0	10	0
Harvesting, - - - - -	- - - - -	1	10	9
Thrashing 30 quarters 7 bushels, - - - - -	- - - - -	1	13	0
		<hr/>		
Rent, &c. - - - - -	- - - - -	9	3	3
		8	10	0
		<hr/>		
		17	13	3
		<hr/>		

P R O D U C E.

30 Quarters 7 bushels at 17s.	-	-	-	26	4	6
Expences,	-	-	-	17	3	3
Profit 18 s. 1 d. <i>per</i> acre,	-	-	-	9	1	3
				£.	s.	d.
Ploughing,	-	-	-	1	10	0
Harrowing,	-	-	-	0	3	9
Rolling,	-	-	-	0	0	5
Carting in harvest,	-	-	-	0	5	5
				1	19	7
Clear profit 14 s. 2 d. <i>per</i> acre,	-	-	-	7	1	8

O B S E R V A T I O N S.

Three quarters *per* acre are a greater crop than I had reason to expect after one of barley; for nothing is worse husbandry than this cross cropping of land. I am well persuaded that it would answer much better to any farmer to buy all the oats he uses than to grow them: I this year sowed Y with pease; nearly the same culture, was bestowed on these two fields, except that the preceding stubble was not ploughed up till January, a disadvantage; the soil much the same, and yet the profit on Y *per* acre was one pound sixteen shillings; and on this field only the sixteen shillings. But the advantages in favour of the pease do not rest here, for I intend sowing Y with barley this spring, whereas this is so exhausted, that I propose an ameliorating crop to restore its lost fertility. To finish this parallel I should observe, that it was in general a bad pea year. The benefit of the hollow drains appear however in the comparison of that crop with the last of barley on the same land.

E X P E R I M E N T N^o 6.

Culture, expences, and produce of a rood-field L*, 1765.

C U L T U R E.

This piece was fallowed in 1764. The first ploughing was given in October 1763. It was stirred again in March 1764; again in April, and five

five loads of rotten farm-yard dung, spread on it, were turned in. In May gave it the fourth earth; in June the fifth; and three more by the end of September; the ninth in October; turned in three loads more of farm-yard dung mixed with ditch-earth, and left it ridged-up and water-furrowed for the winter. The first week in March ploughed and sowed it with a bushel of white-oats. The crop was very free from weeds, so that it required no weeding: it was mown in August; the produce two quarters two bushels and three pecks.

EXPENCES.

	l.	s.	d.
Ten ploughings,	0	2	6
Harrowing,	0	0	1
First manuring, the labour,	0	1	6
Second ditto,	0	0	11
Water-furrowing,	0	0	6
Seed,	0	2	0
Sowing,	0	0	0 $\frac{3}{4}$
Mowing and harvesting,	0	0	6
Threshing,	0	2	4
	0	10	4 $\frac{3}{4}$
Rent, &c.	0	8	6
	0	18	10 $\frac{3}{4}$

PRODUCE.

	l.	s.	d.
2 quarters 2 bushels and 3 pecks, at 17s. 6d.	2	0	11 $\frac{1}{2}$
Expences,	0	18	10 $\frac{3}{4}$
Profit 4l. 8s. 3d. per acre.	1	2	0 $\frac{3}{4}$

	l.	s.	d.
Ploughing,	0	2	6
Harrowing,	0	0	1
Manuring,	0	1	8
Carting in harvest,	0	0	1 $\frac{1}{2}$
	0	4	4 $\frac{1}{2}$
Clear profit 3l. 10s. 9d. per acre.	0	17	8 $\frac{1}{4}$

OBSER-

OBSERVATIONS.

The greatness of this profit shews what is to be gained by good management in this sort of culture. Upon many of the preceding crops I sustained loss, and the profit on others is a mere trifle; but by means of thorough tillage and manuring, the product is immense. A difficulty, however, runs through all the crops that are manured with farm-yard dung: the labour only is charged, which is so small an expence that one might almost as well charge nothing. And yet what other method can one follow? To substitute conjectures and suppositions in the room of facts, would never lead to truth. The yard-dung is certainly worth more than I minute; but is a farmer to value any thing by the mere worth? If he was to sell his dung, by way of discovering the value, the price would vary every load: it would be determined by the competition of purchasers. And if there were no purchasers (as might many times be the case) the dung would then have no value. Suppose in May a farmer carts 100 loads from his yard to a field, how is it to be charged to the crop? Not by the *real* value; because that is impossible to be ascertained. Not by an ideal value, or general rate; because there is no such price (in this country at least) farm-yard dung being never either bought or sold. What rule remains for his direction but to state the mere truth; that is, the price it costs him; or, in other words, the amount of the labour bestowed on it. This is the method I take in these experiments.—By no means because it is free from objections, but because they are less than those which attend every other method.

EXPERIMENT N^o 7.

Culture, expences, and produce of a rood field M*, 1765.

CULTURE.

This piece yielded turneps in common management in 1764, but well manured for: they were drawn for cattle in January and February; in the latter of which months, the land received the first ploughing: the beginning of March manured it with five cart loads of compost, consisting of equal parts of ditch earth, hog dung from Bury, coal ashes, and mortar rubbish: ploughed it in soon after, and with it one bushel of white oats. The crop flourished very much, notwithstanding the extreme dryness of the season. Mown the end of August: produce two quarters.

EXPENCES.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	6
Harrowing,	0	0	0 $\frac{1}{2}$
Manuring, cost and labour,	0	14	4
Seed,	0	2	0
Sowing,	0	0	0 $\frac{1}{4}$
Water furrowing,	0	0	2
Mowing and harvesting,	0	0	9
Threshing,	0	2	0
	0	19	10 $\frac{1}{4}$
Rent, &c.	0	4	3
	1	4	1 $\frac{1}{4}$

PRODUCE.

2 Quarters at 17 s. 6 d.	1	15	0
Expences	1	4	1 $\frac{1}{4}$
Profit,	0	10	10 $\frac{3}{4}$
	£.	s.	d.
Ploughing,	0	0	6
Harrowing,	0	0	0 $\frac{1}{2}$
Manuring,	0	13	10 $\frac{3}{4}$
Carting in harvest,	0	0	1 $\frac{1}{2}$
	0	14	6 $\frac{3}{4}$
The above profit,	0	10	10 $\frac{3}{4}$
Loss 14 s. 8 d. per acre,	0	3	8

OBSERVATIONS.

This crop is a very noble one, but the weight of the manuring expences is so great, as to render it a losing one; gaining large crops of oats no more than of any other grain, is sufficient alone to secure a considerable profit in one year; I say in one year, for in a course of several crops I apprehend rich manurings will generally pay very well; this rood is left in such excellent fertility, that there can be no doubt of great future crops, without any more improvement for several years. I have no doubt but

the efficacy of the dunging which the turneps received, would (without the additional manure) have secured a profitable crop of oats: but the rendering it much richer, at an high expence, had the very contrary effect. The extreme dryness of the year should not however be forgotten; this soil is naturally pretty dry and sound, and perhaps was on that account the less proper for receiving in such a season so ample a manuring.

EXPERIMENT N° 8.

Culture, expences, and produce of eight acres, field H*, 1766.

CULTURE.

This grass field was so exceeding badly laid that I determined to break it up, with design to lay it down again. I began to plough it up the eighth of February, and finished it the twenty fifth of April; the ninth and tenth sowed five acres of it with two quarters of the finest white Poland oats I ever beheld, and the other three acres with one quarter black. Harrowed them in with a heavy pair of harrows twice, then with a lighter pair, and last with a gateful of stout bushes, which left it very fine and level. The frosts which succeeded the breaking it up, moulderred the turf, which was a great advantage. From the time of sprouting to harvest, the black bore much the best appearance. August the 25th mowed the white. September 2d carried them: the 10th mowed the black: the 15th carried them.

	Q.	B.	
Product of the latter,	4	2	The best.
	3	2	Screenings.
	7	4	

	Q.	B.	
Of the former,	6	2	The best.
	3	6	Screenings.

	Q.	B.
Total,	10	0
	17	4

EXPENCES.

	£.	s.	d.
One clean earth,	0	16	0
Harrowing,	0	10	0
Rolling,	0	1	0
			Seed,

	£.	s.	d.
Seed,	2	17	0
Water furrowing,	0	3	0
Mowing,	0	9	4
Harvesting,	0	13	0
Threshing,	1	6	3
	6	15	7
Rent, &c.	6	16	0
	13	11	7

PRODUCT.

10 Quarters 4 bushels at 16 s.	8	0	0
7 Quarters screenings at 10 s.	3	10	0
	11	10	0
Loss 5 s. 2 d. per acre.	2	1	7
	£.	s.	d.
Ploughing,	1	18	4
Harrowing,	1	4	0
Rolling,	0	0	4
Carting in harvest,	0	4	4
	3	7	0
Total loss, 13 s. 6 d. $\frac{3}{4}$ per acre,	5	8	7

OBSERVATIONS.

This experiment I conceive to be an important one, for two reasons; first, it shews that the great *immediate* profit of breaking up old laid grass lands is in a good measure imaginary, owing to a want of pulverization, since however rich the turf may be, it is not in a state for yielding much nourishment until the parts are more broken, than can be affected by one ploughing: this is worthy of the consideration of those farmers who are induced to give a great rent for leave to break up fresh ground: whatever the profit may be, it certainly is not immediate, as commonly imagined among them, consequently they should avoid a dependance upon a *quicker return*, than there is reason to believe they have in general. The wetness of

the season in this experiment was, in all probability, an advantage; to black oats it undoubtedly was.

Secondly, the comparison here made between sowing new ploughed land with the two sorts of oats, is quite satisfactory, in proving by a superiority of four bushels *per* acre (or *a fourth*) that the common practice of the farmers is the true one: I was desirous of knowing the point on a better foundation; and had been assured by two gentlemen, that the white would prove the best crop; this experiment however declares the contrary: which may yield best in lighter soils is another affair: I should apprehend the white, if the land breaks up loose and *mellow*, to use the farmer's term.

EXPERIMENT N° 9.

Culture, expences, and produce of $3\frac{1}{2}$ acres, part of field X, 1766.

CULTURE.

Ploughed up the wheat stubble the beginning of December. Stirred it again the 22d of April, and a third time the 2d of May. The 9th harrowed in 1 quarter, 1 bushel of Poland oats. Could not water furrow it until the 19th, the very heavy rains preventing. Mowed them the 26th of August. Carried September 2d. Product four quarters five bushels; viz. two quarters seven bushels of the best, one quarter four bushels of the next best, and two bushels of screenings.

EXPENCES.

	£.	s.	d.
Ploughing,	0	10	6
Harrowing,	0	1	0
Rolling,	0	0	6
Water furrowing,	0	2	0
Seed,	0	18	0
Sowing,	0	0	9
Mowing,	0	4	0
Harvesting,	0	4	9
Threshing,	0	7	10
	<hr/>		
Rent, &c.	2	9	4
	2	19	6
	<hr/>		
	5	8	10
	<hr/>		

P R O-

Chap. 1.

ON A T S

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the season in this experiment was, in all probability, an advantage; to

black oats it undoubtedly was.

Secondly, the comparison between the two sorts of oats, is quite satisfactory, in proving by a

2 Quarters 7 bushels at 18 s.

1 Quarter 4 ditto at 16 s.

2 Bushels screenings, - - - - -

Loss 8 s. 7 d. per acre, - - - - -

Ploughing, - - - - -

Harrowing, - - - - -

Rolling, - - - - -

Carting in harvest, - - - - -

Total loss 16 s. 0 d. $\frac{1}{2}$ per acre, - - - - -

OBSERVATIONS.

This crop although very poor, was as good as could be expected for an after one in so unfavourable a season: but without recurring to the chance of bad seasons, I cannot help remarking how impolitick it is to treat such land as this, and several other fields already registered, in the manner I did, through compliance with the rules of the common husbandry in the neighbourhood, which turns so much on the maxim of two crops and a fallow. Land of this sort that is not hollow drained, nor kept in good heart by means of manure, cannot be profitably cultivated without fallowing for every crop, or sowing an ameliorating one with thorough good cleaning, to every exhausting one. The whole course of these experiments prove this truth; and yet very many are the farmers, in this and other neighbourhoods, who act totally contrary to these ideas; from whence proceeds the wretched crops we have so often seen on their grounds.

EXPERIMENT N° 10.

Culture, expences, and produce of a rood, field L*, 1766.

CULTURE,

CULTURE.

First ploughed in November 1764, on to the ridge for the winter, turning in five loads of yard-dung. The first spring ploughing was the beginning of March; another stirring was given before the end of that month. The beginning of April it received the fourth earth, and was harrowed thrice, spread over it three loads of compost, consisting of equal parts of pond mud, turf, coal ashes, and mixed town dung; ploughed the manure in the end of the month, and harrowed it fine. I left it thus for the weeds to grow, till the middle of June, when a very full crop was ploughed in by the sixth earth. Stirred it thrice more by the end of September, and twice in October, the last of which threw it on to the ridge again, and left it well water furrowed for the winter. Ploughed and sowed it the beginning of March with six pecks of oats. No crop could flourish more; and notwithstanding the wetness of the season, it remained very free from weeds. Mowed in August.

EXPENCES.

						£.	s.	d.
Eleven ploughings,	-	-	-	-	-	0	2	9
Five harrowings,	-	-	-	-	-	0	0	2 $\frac{1}{2}$
Three water furrowings,	-	-	-	-	-	0	0	6
Cost and labour in manuring,	-	-	-	-	-	0	7	6
Seed and sowing,	-	-	-	-	-	0	3	0 $\frac{3}{4}$
Mowing and harvesting,	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	0	3	1 $\frac{1}{2}$
						0	18	1 $\frac{3}{4}$
Rent, &c.	-	-	-	-	-	0	8	6
						1	6	7

PRODUCE.

3 Quarters 2 bushels at 18 s.	-	-	-	-	-	2	18	6
Expences,	-	-	-	-	-	1	6	7 $\frac{3}{4}$
Profit,	-	-	-	-	-	1	11	10 $\frac{1}{4}$

Ploughing

	£.	s.	d.	
Ploughing, - - - - -	0	6	7	
Harrowing, - - - - -	0	0	6	
Manuring, - - - - -	0	7	7 $\frac{3}{4}$	
Carting in harvest, - - - - -	0	0	1 $\frac{1}{2}$	
	<hr/>			0 14 10 $\frac{1}{4}$
Clear profit 3 l. 8 s. <i>per</i> acre. - - - - -	0	17	0 $\frac{1}{2}$	<hr/>

OBSERVATIONS.

This profit is considerable, and the land left in excellent heart; so that every circumstance unites to render the crop uncommonly beneficial. I should have observed, that the oats were laid before harvest almost flat to the ground; but yet the damage they received was inconsiderable, as may be gathered from the product and the price of it: indeed I have often remarked, that oats receive less damage from being laid than any other grain. The profit of this crop on a single acre exceeds that of many whole fields this year; my common ones are very bad, and the loss considerable.

EXPERIMENT N^o II.

Culture, expences, and produce of three acres, part of field O, 1767.

CULTURE.

April 22d, ploughed and sowed the turnep land with one quarter four bushels of white oats. Mowed it September 5th. Carried the 15th. Produce sixteen quarters seven bushels and an half.

EXPENCES.

	£.	s.	d.
One ploughing, - - - - -	0	3	0
Harrowing, - - - - -	0	1	6
Seed, - - - - -	1	7	0
Sowing, - - - - -	0	0	9
Mowing, - - - - -	0	3	6
Harvesting, - - - - -	0	4	0
Harvest expences, - - - - -	0	3	0
Threshing at 1 s. 4 d. - - - - -	1	2	0
	<hr/>		
	3	4	9
Rent, &c. - - - - -	2	11	0
	<hr/>		
	5	15	9

P R O.

PRODUCE.

	£.	s.	d.
16 Quarters $7\frac{1}{2}$ bushels,	13	5	3
Expences,	5	15	9
Profit 2 l. 9 s. 10 d. <i>per</i> acre,	7	9	6
	£.	s.	d.
Ploughing,	0	7	$3\frac{1}{4}$
Harrowing,	0	3	$4\frac{1}{2}$
Carting in harvest,	0	1	$7\frac{1}{2}$
	0	12	$3\frac{1}{4}$
Clear profit 2 l. 5 s. 8 d. $\frac{3}{4}$ <i>per</i> acre.	6	17	$2\frac{1}{4}$

OBSERVATIONS.

This experiment is a very pregnant proof of the great effects attending a plentiful manuring; for the thorough dunging, which the preceding crop of turneps received, operated not only to the production of a considerable return of these useful roots, but this year occasioned the above noble crop of oats, besides the soil being left in excellent heart. Naturally good as this field is, yet without such manuring, so great a crop could by no means be expected with so little tillage.

EXPERIMENT N^o 12.

Culture, expences, and produce of eleven acres, field D, 1767.

CULTURE.

December 8th, &c. ridged up the pea stubble of 1766. April 8th, &c. harrowed, ploughed harrowed and sowed it with six quarters of black oats. Thiftled them in June. Mowed 24th September. Carried the 30th. Produce twenty-three quarters four bushels; and four quarters four bushels of screenings. In all twenty-eight quarters; or two quarters four bushels and one peck *per* acre.

EXPENCES.

EXPENCES.

								£.	s.	d.
Two ploughings,	-	-	-	-	-	-	-	1	2	0
Harrowings,	-	-	-	-	-	-	-	0	6	0
Seed,	-	-	-	-	-	-	-	4	16	0
Sowing,	-	-	-	-	-	-	-	0	8	3
Water-furrowing,	-	-	-	-	-	-	-	0	8	0
Rolling,	-	-	-	-	-	-	-	0	1	0
Thiftling,	-	-	-	-	-	-	-	0	16	6
Mowing,	-	-	-	-	-	-	-	0	12	10
Harvelting,	-	-	-	-	-	-	-	0	16	2
Harvest expences,	-	-	-	-	-	-	-	0	11	0
Threshing,	-	-	-	-	-	-	-	2	2	0
								<hr/>		
Rent, &c.	-	-	-	-	-	-	-	11	19	9
								9	7	0
								<hr/>		
								21	6	9
								<hr/>		

PRODUCE.

23 quarters 4 bushels,	-	-	-	-	-	-	-	17	10	0
Screenings,	-	-	-	-	-	-	-	1	18	3
								<hr/>		
								19	8	3
								<hr/>		
Loss, 3 s. 6 d. per acre,	-	-	-	-	-	-	-	1	18	6
								<hr/>		

								£.	s.	d.
Ploughing,	-	-	-	-	-	-	-	2	13	7½
Harrowing,	-	-	-	-	-	-	-	1	0	7½
Rolling,	-	-	-	-	-	-	-	0	0	5½
Carting in harvest,	-	-	-	-	-	-	-	0	5	11½
								<hr/>		
								4	0	8
								<hr/>		
Total loss, 10 s. 10 d. per acre,	-	-	-	-	-	-	-	5	19	2
								<hr/>		

OBSERVATIONS.

As a wet season is generally the most beneficial to black oats, I could not avoid being disappointed at the poorness of this crop. I expected the horse-hoeings which the preceding one of pease had received, would have proved as advantageous as a fallow; but the number of thistles which arose, and the smallness of the produce, convinced me of the contrary. Notwithstanding black oats, however, delight rather in wet than dry seasons, yet this for naturally wet land may easily be supposed too moist, and the crop the worse on that account: for this return is not more than might be expected after wheat or barley; and the pease could not damage the land equally with them. It appears from this produce, that, all expences considered, a farmer can scarce reap any profit from less than four or five quarters *per* acre of this grain; and consequently had better fallow, or otherwise dispose of his land, than sow it, unless he has good reason to expect such a return. This crop was twice ploughed for; which is not usual for black oats.

EXPERIMENT N^o 13.

Culture, expences, and produce of a rood, field L*, 1767.

CULTURE.

This rood yielded cabbages in complete culture in 1766. They were cut for cattle in the winter, and the land poughed thrice by the end of April, when it was sown with six pecks of white oats. They flourished exceedingly through the season, and were cut in August: the produce three quarters two bushels and a peck.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	0	9
Harrowing,	0	0	0 $\frac{1}{2}$
Seed and Sowing,	0	3	5 $\frac{1}{4}$
Water-furrowing,	0	0	3
Mowing and harvesting,	0	1	3
Threshing,	0	3	3 $\frac{3}{4}$
	0	9	0 $\frac{1}{2}$
Rent,	0	4	3
	0	13	3 $\frac{1}{2}$

PRO-

PRODUCE.

	£.	s.	d.
3 quarters 2 bushels 1 peck,	2	19	7 $\frac{1}{2}$
Expences,	0	13	3 $\frac{1}{2}$
Profit.	2	6	4
<hr/>			
	£.	s.	d.
Ploughing,	0	7	3 $\frac{3}{4}$
Harrowing,	0	0	1
Carting in harvest,	0	0	1 $\frac{1}{2}$
	0	7	6 $\frac{1}{4}$
Clear profit 7 l. 15 s. 3 d. per acre.	1	18	9 $\frac{1}{4}$

OBSERVATIONS.

This profit is very great. Such a crop of oats has very seldom, if ever, been produced by the common management. Here we find that very ample manuring of one crop answers prodigiously to succeeding ones; a point of very great importance: but this is not the proper place to consider it. While a demand for oats keeps them at nearly so high a price as here minuted, it must undoubtedly answer greatly to every farmer to sow no greater quantity of land than he can manage in a masterly manner.

EXPERIMENT N° 14.

Culture, expences, and produce of a rood, field M*, 1767.

CULTURE.

This rood yielded carrots, in complete management, in 1766, which were drawn in November, and the land ploughed on to the ridge directly. In February gave it the first spring-earth: ploughed it twice more in March; and the beginning of April ploughed and sowed six pecks of white-oats: mown the end of August. Produce three quarters.

EXPENCES.

	l.	s.	d.
Four ploughings, - - - - -	0	1	0
Harrowing, - - - - -	0	0	0 $\frac{1}{2}$
Seed and sowing, - - - - -	0	3	5 $\frac{1}{4}$
Water-furrowing, - - - - -	0	0	1
Mowing and harvesting, - - - - -	0	1	0
Threshing, - - - - -	0	3	0
	<hr/>		
Rent, &c. - - - - -	0	8	6 $\frac{1}{4}$
	0	4	3
	<hr/>		
	0	12	9 $\frac{1}{4}$

PRODUCE.

3 quarters at 18s. - - - - -	2	14	0
Expences, - - - - -	0	12	9 $\frac{1}{4}$
	<hr/>		
Profit, - - - - -	2	1	2 $\frac{1}{4}$

	£.	s.	d.
Ploughing, - - - - -	0	9	9
Harrowing, - - - - -	0	0	1
Carting in harvest, - - - - -	0	0	1 $\frac{1}{2}$
	<hr/>		
	0	9	11 $\frac{1}{2}$
	<hr/>		
Clear profit 6 l. 4 s. 11 d. <i>per acre.</i> - - - - -	1	11	2 $\frac{3}{4}$

OBSERVATIONS.

This is a fresh proof that no crop is of that inferior nature as not to pay extremely well for being sown upon land in great heart. Oats, among common farmers, are looked upon as such coarse and rank feeders, that any land will do for them, and not requiring good management: so that we seldom find more than one earth bestowed upon them. But this trial, among the rest, shews how much mistaken our farmers are when they entertain such ideas; and unfortunately it is the practice of nine-tenths of the kingdom.

GENERAL

GENERAL OBSERVATIONS on these EXPERIMENTS.

A very short recapitulation will give an idea of these trials. I shall first consider those commonly conducted, and then such as were prepared for in an extraordinary manner; ranking them under the heads, — *Expences, Product, Profit and Loss.*

EXPENCES.

							£.	s.	d.
Experiment N° 1.	-	-	-	-	-	-	1	16	11
2.	-	-	-	-	-	-	1	17	9 $\frac{3}{4}$
3.	-	-	-	-	-	-	2	3	4 $\frac{3}{4}$
4.	-	-	-	-	-	-	2	4	2 $\frac{1}{4}$
5.	-	-	-	-	-	-	1	18	3 $\frac{1}{4}$
8.	-	-	-	-	-	-	2	2	3 $\frac{3}{4}$
9.	-	-	-	-	-	-	1	18	6 $\frac{1}{2}$
11.	-	-	-	-	-	-	2	2	8 $\frac{1}{4}$
12.	-	-	-	-	-	-	2	6	1 $\frac{1}{2}$
Average, 2l. 1s. 1 $\frac{1}{2}$ d.	-	-	-	-	-	-	18	10	3

PRODUCT.

							Q.	B.	P.
Experiment N° 1.	-	-	-	-	-	-	4	0	0
2.	-	-	-	-	-	-	2	0	0
3.	-	-	-	-	-	-	6	2	0
4.	-	-	-	-	-	-	2	7	2
5.	-	-	-	-	-	-	3	0	2
8.	-	-	-	-	-	-	1	2	2
9.	-	-	-	-	-	-	1	2	2
11.	-	-	-	-	-	-	5	5	0
12.	-	-	-	-	-	-	2	1	0
Average, 3q. 1b. 1p.	-	-	-	-	-	-	28	5	0

PROFIT

PROFIT and LOSS.

Experiment N^o 1. Profit.

	£.	s.	d.
1. Profit.	1	7	0 $\frac{1}{4}$
3. Profit.	3	5	11 $\frac{3}{4}$
5. Profit.	0	14	2
11. Profit.	2	5	8 $\frac{1}{2}$
	7	12	11

	£.	s.	d.
2. Loss,	0	1	9 $\frac{3}{4}$
4. Ditto,	0	0	0 $\frac{1}{4}$
8. Ditto,	0	13	6 $\frac{3}{4}$
9. Ditto,	0	16	0 $\frac{1}{2}$
12. Ditto,	0	10	10
		2	2 3 $\frac{1}{4}$
Total profit,		5	10 7 $\frac{1}{4}$
Which is <i>per</i> acre,	0	12	3 $\frac{1}{2}$

It is here worthy of remark, that the expence of cultivating oats should, upon different plans, be so nearly equal: about two pounds *per* acre is the average expence; that sum is not low for a crop that has seldom much tillage bestowed upon it. Now I should apprehend it pretty obvious to the most common of farmers, that it can never answer to bestow a certain expence of forty shillings *per* acre upon a crop that is ill managed; and, in those circumstances, extremely hazardous in the return. Two particular crops in the preceding carry the clear profit to twelve shillings and three-pence halfpenny *per* acre, it is two considerable ones; one that followed lucerne, and the other that succeeded turneps richly manured with hog dung. If these were deducted, the remainder would be a mere trifle. Is it not evident that the bestowing a certain expence of forty shillings *per* acre for an uncertain profit of a shilling or two, can never answer? It must be undoubtedly much preferable to buy all the oats consumed, than to raise them upon such terms. The soil in these cases should be sowed with some crop that maintains large stocks of cattle, by which means its fertility is upon the increase: turneps, clover, &c. &c.

The average product of three pounds one shilling and one penny, we find from the table of profit and loss, is by no means an adequate return, if a farmer with management parallel to the preceding cannot carry his product much higher, he has the strongest proof that he should either
not

not cultivate this grain at all, or bestow more attention upon it. Let us in the next place review the experiments on oats conducted in a more perfect manner. I shall arrange them under the same heads as the preceding.

EXPENCES.

							£.	s.	d.
Experiment N° 6.	-	-	-	-	-	-	4	13	1
7.	-	-	-	-	-	-	7	14	8
10.	-	-	-	-	-	-	8	6	4
13.	-	-	-	-	-	-	4	3	3
14.	-	-	-	-	-	-	4	11	1
Average 5 l. 17 s. 8½ d.	-	-	-	-	-	-	29	8	1

PRODUCT.

							Q.	B.	P.
Experiment N° 6.	-	-	-	-	-	-	9	3	0
7.	-	-	-	-	-	-	8	0	0
10.	-	-	-	-	-	-	13	0	0
13.	-	-	-	-	-	-	13	1	0
14.	-	-	-	-	-	-	12	0	0
							55	4	0
Average,	-	-	-	-	-	11	0	3	

PROFIT and Loss.

							£.	s.	d.
Experiment N° 6. Profit.	-	-	-	-	-	-	3	10	9
10.	-	-	-	-	-	-	3	8	0
13.	-	-	-	-	-	-	7	15	3
14.	-	-	-	-	-	-	6	4	11
							20	18	11
7. Loss,	-	-	-	-	-	-	0	14	8
Total profit,	-	-	-	-	-	-	20	4	3
Which is per acre,	-	-	-	-	-	4	0	10	

The culture here delineated is remarkable, and it contrasts strongly to the common management: in the latter, forty shillings an acre are expended to produce a profit scarce sufficient to pay the interest of the money

ney employed. In the improved culture, near three times as much *per* acre spent, but not merely to produce three times the profit; but one of four pounds and ten pence *per* acre; that is near ten times as great, including the two good crops abovementioned in the common method, one acre in the improved culture equals nearly seven in the other; besides the amazing difference of the soil being in one case utterly exhausted, and in the other so greatly in heart, as to yield a certainty of good crops in future. The comparison is absolutely decisive; and ought to convince the farmer, that the only way of gaining much profit by the culture of oats is, never to sow them without the land is in great heart: or in other words, not to make a distinction between wheat, barley, and oats, respecting preparation; for if land is not in proper order for the two first, I will from these experiments venture to assert, that it is not fit for oats.

The height to which this good culture has carried the produce of oats, is, on comparison with the husbandry of common farmers very surprizing. It is one amongst the many proofs which a little experience is sufficient to give, that the general ideas of the product of grains are very false: our common notions of great crops are relative merely to bad husbandry, or at least not the best; - and what makes the acquisition of the knowledge of the truth particularly important, is, that these great products are the effects, not of new modes of sowing dependant on gim-crack instruments, nor of any fine system of conduct fit only for the dreams of philosophers: but on the contrary, are gained by common practices alone, improved in degree. Every article of this improved management is common; the perfection consists in nothing but the *quantity* of common *means*.

If it be asked why the farmers do not cultivate their land with equal spirit, I reply, because they have all more land than they can manage. This culture is at first three times over more expensive than the common, consequently the expence of stocking a farm thus managed, would be three times greater than the sums at present applied: now a farmer with much money (according to the common notion) in his pocket on a little farm, would think himself ruined: and so he undoubtedly would be, unless his money was judiciously expended in the increase of product. All of them are eager for large tracts of land, so that the very idea of such expensive culture as here recommended would be impossible. It cannot however be doubted, but that a small farm, managed in this complete manner, would be much more profitable than a large one under the common culture: if the preceding experiments do not prove this fact, they prove nothing.

S E C T.

S E C T. II.

CULTURE and PRODUCE in the New Method.

I Shall select from my minutes only a few of the most interesting trials under this head: their result was so extremely uniform, that there is no absolute necessity for inserting them all. When conclusions are various, impartiality requires that all the experiments tried, should be drawn into one point of view, that the balance of the averages may be drawn; but this is not the case at present.

EXPERIMENT N° I.

Culture, expences, and produce of a rood, field L*, 1765.

CULTURE.

The culture of this rood began in autumn 1763, when it was ploughed on to the ridge for the winter. In the spring it was stirred twice more, and harrowed twice to render it fine, that the weeds might grow plentifully; the effect was answerable, for the beginning of June another earth was given, which turned in a full crop of them. The sixth earth was given in July; three more by the end of September, the last of which again threw it on to the ridge for the winter. In March ploughed it on to the five feet ridge; and soon after arched them up and harrowed them; drilled three rows of oats on the top of each, one foot asunder, taking three pecks of seed.

The first horse-hoeing was given the middle of May, turning a furrow from the rows; and in a few days after hand-hoed them. The beginning of June gave the second horse-hoeing; and the end of the same month both hand-hoed and hand-weeded the rows. the fourth of July

horse-hoed them the third time; and repeated the operation for the last time, in a fortnight after, hand-weeding the plants at the same time. Reaped them the last week in August: produce one bushel.

EXPENCES.

	£.	s.	d.
Eleven ploughings,	0	2	9
Harrowing,	0	0	1
Water furrowing,	0	0	5
Drilling,	0	0	0 $\frac{1}{4}$
Seed,	0	1	6
Two hand-hoeings,	0	1	6
Four horse-hoeings,	0	0	8
Two weedings,	0	0	7 $\frac{1}{2}$
Reaping,	0	1	0
Harvesting, &c.	0	0	4
Threshing,	0	0	1 $\frac{1}{2}$
	0	9	0 $\frac{1}{4}$
Rent, &c.	0	8	6
	0	17	6 $\frac{1}{4}$

PRODUCE.

1 Bushel,	0	2	0
Loss,	0	15	6 $\frac{3}{4}$
	£.	s.	d.
Ploughing,	0	2	9
Harrowing,	0	0	1
Drilling,	0	0	0 $\frac{1}{4}$
Horse-hoeing,	0	1	0
Carting in harvest,	0	0	1 $\frac{1}{2}$
	0	4	0 $\frac{1}{4}$
Total loss 3 l. 18 s. 4 d. per acre,	0	19	7

OBSERVATIONS.

This experiment which pretty nearly represents the result of several others tried this year. proves how totally unfit the drill culture is for the production of oats. I am convinced that there is no possibility of horse-hoeing this grain to any profit; for if it could be done at all, it would have been this year; one great objection is, the stalks sprawling about the intervals, so that the horse-hoeing is either prevented, or the crop much damaged; it is the same with barley: but heavy rains must beat them down much more than they fell of themselves this dry year.

EXPERIMENT N° 2.

Culture, expences, and produce of seven acres field W, 1766.

CULTURE.

In 1761 it was fallow. In 1762 wheat. 1763 barley. 1764 fallow. 1765 wheat.

Ploughed up the wheat stubble the 28th of October, except about two and an half acres in the middle, which was not done 'till the beginning of December. Stirred it again the 23d of April. The 26th ploughed it again, and harrowed it; then struck double furrows eighteen inches asunder, with four feet intervals, and sowed seven bushels of white oats in them, going once over with the harrows to cover the seed. Horse-hoed four times, after which cabbages were planted in the intervals. September 3d reaped them. Carried the 10th. Product five quarters; three of the best, and two quarters of screenings.

EXPENCES.

	£.	s.	d.
Three ploughings, - - - - -	1	1	0
Two harrowings, - - - - -	0	3	0
Striking furrows, - - - - -	0	3	0
7 Bushels of seed, - - - - -	0	14	0
Sowing, - - - - -	0	2	6
Horse-hoeing, - - - - -	0	11	6
Hand-hoeing, - - - - -	0	12	6
Reaping, 3 s. 3 d. - - - - -	1	2	9
A deep water furrow at the bottom of the field, and making outlets three times, - - - - -	0	12	0
Harvesting, - - - - -	0	8	9
Threshing, - - - - -	0	8	4
	<hr/>		
Rent, &c. - - - - -	5	19	4
	5	19	0
	<hr/>		
	11	18	4

PRODUCE.

3 Quarters at 18 s. - - - - -	2	14	0
2 Ditto at 9 s. 6 d. - - - - -	0	19	0
	<hr/>		
	3	13	0
Loss 1 l. 3 s. 7 d. per acre, - - - - -	8	5	4
	<hr/>		
	£.	s.	d.
Ploughing, - - - - -	2	10	3 $\frac{1}{4}$
Harrowing, - - - - -	0	5	3
Horse-hoeing, &c. - - - - -	2	3	9
Carting in harvest, - - - - -	0	3	9 $\frac{1}{2}$
	<hr/>		
	5	3	1 $\frac{1}{2}$
Loss 1 l. 18 s. 4 d. per acre, - - - - -	13	8	5 $\frac{1}{4}$
	<hr/>		

EXPERIMENT N° 3.

CULTURE. •

EXPENSES.

										£.	s.	d.
Two Ploughings,	-	-	-	-	-	-	-	-	-	0	0	6
Harrowing,	-	-	-	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	-	-	-	0	0	0 ³ / ₄
Seed,	-	-	-	-	-	-	-	-	-	0	2	0
Four horse-hoeings,	-	-	-	-	-	-	-	-	-	0	0	8
												Two

	£.	s.	d.
Two hand-hoeings, - - - - -	0	1	9
Two hand-weedings, - - - - -	0	0	6
Harvesting, &c. - - - - -	0	0	4
Threshing, - - - - -	0	0	5
	<hr/>		
Rent, - - - - -	0	6	6 $\frac{1}{4}$
	0	4	3
	<hr/>		
	0	10	9 $\frac{3}{4}$

PRODUCE.

2 bushels, - - - - -	0	4	0
Loss, - - - - -	0	6	9 $\frac{1}{4}$

	£.	s.	d.
Ploughing, - - - - -	0	1	2 $\frac{1}{2}$
Harrowing, - - - - -	0	0	2
Drilling, - - - - -	0	0	0 $\frac{3}{4}$
Horse-hoeing, - - - - -	0	1	0
Carting in harvest, - - - - -	0	0	1 $\frac{1}{2}$
	<hr/>		
	0	2	6 $\frac{3}{4}$

Total loss 1 l. 17 s. 6d. <i>per acre</i> , - - - - -	0	9	4 $\frac{1}{2}$
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OBSERVATIONS.

This trial is a fresh proof how improper oats are for the horse-hoeing culture. They could in no trial have fairer play than in this; but the weakness of the stalks (though they support themselves better than barley) occasions damage from horse-hoeing, without an increase of luxuriance in the crop to repay it.

EXPERIMENT N° 4.

Culture, expences, and produce of ten perches, field L*, 1767.

CULTURE.

CULTURE.

This piece yielded in 1766 horse-hoed turneps in the perfection of tillage and manuring. I marked it for this crop of oats, with intention to exert myself particularly, that I might, if possible, get at least a good crop of horse-hoed oats. The turneps were drawn in November, and the ridges (five feet ones) reversed by a ploughing given directly after. I then spread a load and a half of rotten farm-yard dung, which had been well mixed together, and turned it in by a second earth, which at the same time arched up the ridges, and laid them dry for the winter. The beginning of March stirred it again, reversing the ridges, and soon after harrowed in three bushels of malt-dust; arched them again by another ploughing, and drilled three rows of white oats on the crown of each, using a peck and a half of seed. Throughout the following season I kept it absolutely free from weeds: it was horse-hoed four times, hand-hoed thrice, and hand-weeded twice: reaped the middle of August. The product one bushel and three pecks. The proportions *per* acre are as follow:

EXPENCES.

	£.	s.	d.
Four ploughings,	0	4	0
Harrowing,	0	0	4
Drilling,	0	0	3 $\frac{1}{2}$
Seed,	0	11	6
Water-furrowing,	0	0	6
Cost and labour manuring,	2	3	0
Four horse-hoeings,	0	2	8
Three hand-hoeings,	0	12	6
Two hand-weedings,	0	4	9
Reaping,	0	3	0
Harvesting, &c.	0	2	0
Threshing,	0	4	8
	<hr/>		
Rent,	4	9	2 $\frac{1}{2}$
	0	17	0
	<hr/>		
	5	6	2 $\frac{1}{2}$
	<hr/>		

PRODUCE.

PRODUCE.

	£.	s.	d.
3 Quarters 4 bushels at 18s.	3	3	0
Loss,	2	3	2 $\frac{1}{4}$
	£.	s.	d.
Ploughing,	0	9	9
Harrowing,	0	0	9
Manuring,	1	2	9 $\frac{1}{4}$
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
	1	18	0 $\frac{3}{4}$
Total loss,	4	1	3 $\frac{1}{4}$

OBSERVATION.

Relative to my future practice, this experiment shall be absolutely decisive. I will have nothing to do with a culture for oats that, with such advantages, yields a loss of four pounds an acre. Here is no year of fallow to raise the expences, and the advantage of following a crop that received a most ample manuring; but yet all would not do—loss is the result. If it be said, that the expence of the present manuring is too high to be paid; I reply, *Strike it out of the account; deduct the expence, but preserve the advantage.* The amount is exactly that of the loss: so that with such a glaring advantage, the cultivator is to expect from drilling no profit. A fine inducement to be at such an expence!

GENERAL OBSERVATIONS.

There is no great utility in varying the views of an object which admits of so little variety; however, I shall draw the averages of these experiments, for the satisfaction of such readers as do not turn to each article distinctly, excluding the last trial, which is completely managed.

EXPENCES.

EXPENCES.

Experiment N°	1. per acre,						£.	s.	d.
		-	-	-	-	-	4	6	4
	2.	-	-	-	-	-	2	8	9 $\frac{1}{4}$
	3.	-	-	-	-	-	2	13	6
							<u>9</u>	<u>8</u>	<u>7$\frac{1}{4}$</u>
Average,	-	-	-	-	3	2	10 $\frac{1}{4}$		

PRODUCT.

Experiment N°	1.						Q.	B.	P.
	-	-	-	-	-	-	0	4	0
	2.	-	-	-	-	-	0	5	2
	3.	-	-	-	-	-	1	0	0
							<u>2</u>	<u>1</u>	<u>2</u>
Average,	-	-	-	-	-	0	5	3	

Loss.

Experiment N°	1.						£.	s.	d.
	-	-	-	-	-	-	3	18	4
	2.	-	-	-	-	-	1	18	4
	3.	-	-	-	-	-	1	17	6
							<u>7</u>	<u>14</u>	<u>2</u>
Average,	-	-	-	-	-	£.	2	11	4

These particulars require no comment.

S E C T. III.

Comparison between the Old and New Methods in the Culture of OATS.

IN the trial of many experiments, the least accurate observer will find some that do not, by any means, carry the use which was expected from them. This has been the case with many during the course of my husbandry; and I have accordingly struck them from the register. The present section might be greatly swelled with trials, which, five or six years ago, I thought of very great importance; but the result has turned out so extremely uniform, and the facts of consequence are so very decisive, that the necessity of inserting them is much the less. The most surprising circumstance relative to this section, is the necessity that yet exists of having such an one in my book. I tried this comparison in woods, as well as smaller pieces:—but I shall extract the latter to chuse; as the smaller the pieces are in comparative trials, the better their authority.

EXPERIMENT N° I.

Culture, expences, and produce of twenty perches, field M*, 1765.

CULTURE.

This piece yielded horse-hoed turneps in 1764. They were drawn for cattle in December and January: the beginning of March ploughed it for the first time: the first fortnight in April stirred it twice more; the last of which left half of it arched up in five feet ridges, and half on common three feet ones. Drilled the first with three rows of white oats on the top of each, using half a peck of seed, and at the same time sowed the other half with a peck and a quarter. The second week in June hand-hoed the rows, and gave the first horse-hoeing a few days after. Before the end of the month another horse-hoeing or hand-hoeing

ing and a weeding were given : in July two more horse-hoeings and another hand-hoeing. Mowed the broad-cast and reaped the drills the last week in August : the product of the first six pecks, of the latter a peck and a half. The proportions *per* acre are as follow :

BROAD-CAST.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Water-furrowing,	0	0	6
Seed,	0	12	0
Sowing,	0	0	3
Mowing,	0	1	0
Harvesting,	0	1	2
Threshing,	0	3	0
	<hr/>		
Rent,	0	17	0
	<hr/>		
	1	18	3

PRODUCE.

3 quarters at 17 s.	2	11	0
Expences,	1	18	3
	<hr/>		
Profit,	0	12	9

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	4
Carting in harvest,	0	0	6½
	<hr/>		
	0	3	10½

Clear profit,	0	8	10½
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DRILLED.

EXPENCES.

	£.	s.	d.
Three ploughings, - - - - -	0	3	0
Harrowing, - - - - -	0	0	4
Water-furrowing, - - - - -	0	0	6
Seed, - - - - -	0	4	0
Drilling, - - - - -	0	0	3
Four horse-hoeings, - - - - -	0	2	8
Three hand-hoeings, - - - - -	0	8	9
One hand-weeding, - - - - -	0	2	0
Reaping, - - - - -	0	3	9
Harvesting, &c. - - - - -	0	1	0
Threshing, - - - - -	0	0	9
	<hr/>		
	1	7	0
Rent, &c. - - - - -	0	17	0
	<hr/>		
	2	4	0

PRODUCE.

6 bushels at 17 s. - - - - -	0	12	9
Loss, - - - - -	1	11	3
	<hr/>		

	£.	s.	d.
Ploughing, - - - - -	0	3	0
Harrowing, - - - - -	0	0	4
Drilling, - - - - -	0	0	3
Horse-hoeing, - - - - -	0	4	0
Carting in harvest, - - - - -	0	0	6 $\frac{1}{2}$
	<hr/>		
	0	8	1 $\frac{1}{2}$
Total loss, - - - - -	1	19	4 $\frac{1}{2}$
	<hr/>		
Profit by the broad-cast, - - - - -	0	8	10 $\frac{1}{2}$
Loss by the drilled, - - - - -	1	19	4 $\frac{1}{2}$
	<hr/>		
Superiority of the former, - - - - -	2	8	3
	<hr/>		

OBSER-

OBSERVATIONS.

This comparison is very decisive, and proves sufficiently clear, that the drill culture is not to be named with the broad-cast for profit, in the culture of oats. The smallness of the advantage gained in the common way, is not the point of enquiry; it is the mere ballance of the two accounts that in this place demands the reader's attention.

EXPERIMENT N° 2.

Culture, expences, and produce of half a rood, field M*, 1766.

CULTURE.

This piece yielded potatoes in 1765, which were taken up in October, and the land ploughed on to the ridge for winter. The fineness of the weather in the beginning of March was such, that I was enabled to give it two earths, and get the seed in by the 12th; one half, on five feet ridges, was drilled in treble rows, at one foot, taking half a peck of seed; and the other half sowed broad-cast with a peck and a half. May 17th hand-hoed the rows; but could do nothing more during that month, on account of the extreme wetness of the season. In June horse-hoed them thrice, hand-hoed them twice, and weeded them once. July 11th gave the last horse-hoeing, and soon after hand-weeded the rows again. Cut both the 20th of August. Product of the broad-cast, one bushel and half a peck; of the drilled, two pecks. The following are the proportions *per acre*.

BROAD-CAST.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Seed,	0	13	6
Sowing,	0	0	3
Mowing,	0	1	0
Harvesting, &c.	0	2	0
Threshing,	0	3	0
	<hr/>		
Rent,	0	17	0
	<hr/>		
	2	0	1
	<hr/>		

PRO-

PRODUCE.

2 quarters 2 bushels at 18 s.

Expences,

Profit,

£.	s.	d.
2	0	6
2	0	1
<hr/>		
0	0	5

Ploughing,

Harrowing,

Carting in harvest,

£.	s.	d.
0	7	2 $\frac{1}{4}$
0	0	9
0	0	6 $\frac{1}{2}$
<hr/>		

The above profit,

Loss,

£.	s.	d.
0	8	5 $\frac{3}{4}$
0	0	5
<hr/>		
0	8	0 $\frac{3}{4}$

DRILLED.

EXPENCES.

Three ploughings,

Harrowing,

Seed,

Drilling,

Four horse-hoeings,

Two hand-hoeings,

Two weedings,

Reaping,

Harvesting, &c.

Threshing,

£.	s.	d.
0	3	0
0	0	4
0	4	6
0	0	3 $\frac{1}{2}$
0	2	8
0	7	0
0	2	3
0	2	4
0	1	9
0	0	1 $\frac{1}{4}$
<hr/>		

Rent, &c.

£.	s.	d.
1	4	2 $\frac{3}{4}$
0	17	0
<hr/>		

PRODUCE.

1 quarter,

Loss,

£.	s.	d.
2	1	2 $\frac{3}{4}$
<hr/>		
0	18	0
<hr/>		
1	3	2 $\frac{3}{4}$

Ploughing,

	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	0	9
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
			<hr/>
			0 12 8 $\frac{1}{4}$

Total loss,	-	-	-	-	-	1	15	11 $\frac{1}{2}$
Loss by the broad-cast,	-	-	-	-	-	0	8	0 $\frac{3}{4}$
								<hr/>
Superiority of the latter,	-	-	-	-	-	1	7	10 $\frac{3}{4}$

OBSERVATIONS.

Nothing can be more decisive than this comparison: bad as the old husbandry is in an unfavourable season and on a poor soil, yet we find the new infinitely worse; accidentally, the best of systems might turn out very indifferent in its produce, but then it would never continue so very uniform.

EXPERIMENT N° 3.

Culture, expences, and produce of half a rood, field L*, 1766.

CULTURE.

I fixed upon this piece to try the old and new methods in the culture of oats, under complete management, that I might see in what degree the common mode was superior to the other in repaying high expences. It received the first ploughing in October 1764, on to the ridge, to lay dry in the winter. In March following it had the first spring ploughing.

The third earth was given in April, when it was twice harrowed. The first week in May manured it with two loads of a compost consisting of equal parts of coal ashes, mortar rubbish, hog dung, &c. all town manure. Gave it two more ploughings the same month, and another in June. From thence to October a ploughing every month, the last of which threw it on to the ridge, turning in two loads of rotten farm-yard dung. The beginning of March 1766, ploughed it again, throwing half of it on to five feet ridges, and half on to common three feet ones; and soon after arched up the first by another earth, and harrowing it fine; drilled three rows of white oats on the crown of each ridge, one foot asunder, using half a peck of seed: at the same time harrowed in a peck and half on the other part. The corn came up in a very luxuriant manner. Hand-hoed the rows of the drilled, the last week in April; and

horse-

D R I L L E D.

horse-hoed them the beginning of May, which operation was repeated before the expiration of that month. In June two more horse-hoings were given, a hand-hoeing, and a weeding. The first week in July hand-weeded it again. Reaped it the beginning of August. Product two bushels. Mowed the broad-cast at the same time: product five bushels and half a peck. The proportion *per* acre as follow:

B R O A D - C A S T.

E X P E N C E S.

	£.	s.	d.
Twelve ploughings,	0	12	0
Harrowing,	0	0	6
Water furrowing,	0	2	6
Seed,	0	12	0
Sowing,	0	0	3
First manuring,	2	16	8
Second ditto,	0	8	0
Mowing,	0	1	2
Harvesting,	0	1	3
Threshing,	0	10	3
	5	4	7
Rent, &c.	1	14	0
	6	18	7

P R O D U C E.

10 Quarters 2 bushels at 18 s.	9	9	0
Expences,	6	18	7
Profit,	2	10	5

	£.	s.	d.
Ploughing,	1	8	9
Harrowing,	0	1	1½
Manuring the first time,	3	0	8
Second ditto,	0	10	0
Carting in harvest,	0	0	6½
	5	1	1
The above profit,	2	10	5
Loss,	2	10	8

D R I L L E D.

DRILLED.

EXPENCES.

	£.	s.	d.
Twelve ploughings,	0	12	0
Harrowing,	0	0	6
Water furrowing,	0	3	0
Manuring,	3	4	8
Seed,	0	4	6
Drilling,	0	0	3½
Four horse-hoeings,	0	2	8
Two hand-hoeings,	0	7	9
Two weedings,	0	2	6
Reaping,	0	2	6
Harvesting, &c.	0	1	4
Threshing,	0	5	0
	5	6	8½
Rent,	1	14	0
	7	0	8½

PRODUCE.

4 Quarters at 18 s.	3	12	0
Loss,	3	8	8½

	£.	s.	d.
Ploughing,	1	8	9
Harrowing,	0	1	1½
Manuring,	3	10	8
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting in harvest,	0	0	6½
	5	5	4
Total loss,	8	14	0½
Ditto by the broad-cast,	2	10	8
Superiority of the latter,	6	3	4½

OBSERVATIONS.

The comparison in this trial is varied from the preceding, and although the crop is much better than can commonly be gained by a drilling, being in itself considerable, yet the loss is vastly greater than by the broadcast: to such an amount that the parallel is absolutely decisive.

GENERAL OBSERVATIONS.

It appears from these experiments, that the new husbandry is so much inferior to the old in the culture of oats, as to be absolutely inexpedient, and but another name for nonsense and absurdity. Where a superiority is so great the trial ceases to be a matter of curiosity and entertainment. It is requisite however in justice to the principal writers in favour of the drill culture, to remark, that I do not at present remember any one who particularly recommends it for oats.

S E C T I V.

Of. the QUANTITY of SEED.

I Shall under this head extract from my minutes a few experiments that coincide most with the general event of all. The voluminousness of these sheets obliges me to circumscribe those sections that are not of the first importance, when the trials are pretty uniform in the result. I made several trials concerning the quantity in the new method: but that has been already found so extremely unfavourable in general, that I shall desist from inserting them; and confine myself to the common mode of sowing.

EXPERIMENT N° 1.

The beginning of April 1764, marked four pieces of land in field L*, that had been turneps the preceding year, each containing ten perches, and sowed them as follows:

- N° 1. With $\frac{1}{4}$ of a peck of white oats.
- 2. With $\frac{1}{2}$ ditto.
- 3. With $\frac{3}{4}$ ditto.
- 4. With 1 peck.

The culture and every article of management were exactly equal: The produce,

N°	1.	2.	3.	4.	Q.	B.	P.
1.	-	-	-	-	0	0	$1\frac{1}{2}$
2.	-	-	-	-	0	0	$2\frac{3}{4}$
3.	-	-	-	-	0	0	$3\frac{3}{4}$
4.	-	-	-	-	0	1	2

The proportion *per* acre of seed and crop are as follow:

A a 2

N° 1.

							Q.	B.	P.
N ^o 1. Produce,	-	-	-	-	-	-	0	6	0
Seed,	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	0	5	0
2. Produce,	-	-	-	-	-	-	1	3	0
Seed,	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	1	1	0
3. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	4	0
4. Produce,	-	-	-	-	-	-	3	0	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	2	4	0

OBSERVATIONS.

It is very evident from this trial that the larger the quantity of seed the better the crop, as far as four bushels; the quick rise also, and particularly from N^o 3 to 4, gives much reason to suppose this effect would have extended farther.

EXPERIMENT N^o 2.

At the same time with the preceding trial mark six pieces in field M*, that yielded turneps in 1763, and sowed them as follows.

- N^o 1. With $\frac{1}{2}$ a peck.
 2. With $\frac{3}{4}$ ditto.
 3. With 1 peck.
 4. With $1\frac{1}{4}$ ditto.
 5. With $1\frac{1}{2}$ ditto.
 6. With $1\frac{3}{4}$ ditto.

Culture and management in every respect the same. The produce,

							Q.	B.	P.
N ^o 1.	-	-	-	-	-	-	0	0	3
2.	-	-	-	-	-	-	0	0	$3\frac{1}{4}$
3.	-	-	-	-	-	-	0	1	$0\frac{1}{2}$
4.	-	-	-	-	-	-	0	1	$2\frac{3}{4}$
5.	-	-	-	-	-	-	0	1	3
6.	-	-	-	-	-	-	0	1	$3\frac{1}{2}$
							Seed		

Seed and produce proportioned *per acre* are as follows :

							Q.	B.	P.
N ^o 1.	Produce,	-	-	-	-	-	1	4	0
	Seed,	-	-	-	-	-	0	2	0
Clear produce,							1	2	0
2.	Produce,	-	-	-	-	-	1	7	0
	Seed,	-	-	-	-	-	0	3	0
Clear produce,							1	4	0
3.	Produce,	-	-	-	-	-	2	2	0
	Seed,	-	-	-	-	-	0	4	0
Clear produce,							1	6	0
4.	Produce,	-	-	-	-	-	3	3	0
	Seed,	-	-	-	-	-	0	5	0
Clear produce,							2	6	0
5.	Produce,	-	-	-	-	-	3	4	0
	Seed,	-	-	-	-	-	0	6	0
Clear produce,							2	6	0
6.	Produce,	-	-	-	-	-	3	6	0
	Seed,	-	-	-	-	-	0	7	0
Clear produce,							2	7	0

OBSERVATIONS.

This experiment confirms the idea hinted in the last, that four bushels are not a quantity of seed-oats sufficient for an acre. It is very clear that seven bushels are the most advantageous portion of these ; and how much farther the scale of produce would go, is not determinable : but from the rise from N^o 5 to 6 being only one bushel, it is to be supposed that it would not extend much farther.

N^o 1. With $\frac{1}{2}$ peck of white oats.
2. With 1 peck ditto.
3. With $1\frac{1}{4}$ ditto.
4. With $1\frac{1}{2}$ ditto.
5. With $1\frac{3}{4}$ ditto.
6. With 2 ditto.

N°	1.	2.	3.	4.	5.	6.	2.	B.	P.
1.	-	-	-	-	-	-	0	0	3 $\frac{1}{4}$
2.	-	-	-	-	-	-	0	1	0 $\frac{1}{4}$
3.	-	-	-	-	-	-	0	1	3
4.	-	-	-	-	-	-	0	2	0
5.	-	-	-	-	-	-	0	2	1
6.	-	-	-	-	-	-	0	2	1

							Q.	B.	P.
N ^o 1.	Produce,	-	-	-	-	-	1	5	0
	Seed,	-	-	-	-	-	0	2	0
							<hr/>		
	Clear produce,	-	-	-	-	-	1	3	0
							<hr/>		
2.	Produce,	-	-	-	-	-	2	1	0
	Seed,	-	-	-	-	-	0	4	0
							<hr/>		
	Clear produce,	-	-	-	-	-	1	5	0
							<hr/>		
3.	Produce,	-	-	-	-	-	3	4	0
	Seed,	-	-	-	-	-	0	5	0
							<hr/>		
	Clear produce,	-	-	-	-	-	2	7	0
							<hr/>		
4.	Produce,	-	-	-	-	-	4	0	0
	Seed,	-	-	-	-	-	0	6	0
							<hr/>		
	Clear produce,	-	-	-	-	-	3	2	0

5. Pro-

Clear produce,	-	-	-	-	-	3	5	0
6. Produce,	-	-	-	-	-	4	4	0
Seed,	-	-	-	-	-	1	0	0
Clear produce,	-	-	-	-	-	3	4	0

OBSERVATIONS.

This trial is very satisfactory in extending beyond the most advantageous quantity ; for we find, by that means, that seven bushels are superior to a quarter ; consequently, are the proper portion for an acre of land. This is much higher than the common notion of seed extends in most counties, and vastly beyond the directions of the writers on husbandry.

EXPERIMENT N° 4.

At the same time with the preceding trial marked ten square perches of land in field M*, that yielded cabbages the last year, and sowed them with the following quantities of white oats.

- N^o 1. With $\frac{4}{5}$ of a pint.
2. With 1 pint.
3. With $1\frac{2}{5}$ ditto.
4. With $1\frac{4}{5}$ ditto.
5. With 1 quart.
6. With 1 qt. and $\frac{1}{5}$ of a pint.
7. With 1 ditto and $\frac{2}{5}$ ditto.
8. With 1 ditto and $\frac{3}{5}$ ditto.
9. With 1 ditto and $\frac{4}{5}$ ditto.
10. With 1 quart and 1 pint.

The culture and management exactly the same. The produce :

N°	1.	2.	3.	4.	5.	6.	7.	8.	P.	Q.	P.
1.	-	-	-	-	-	-	-	-	0	2	$0\frac{1}{2}$
2.	-	-	-	-	-	-	-	-	0	2	I
3.	-	-	-	-	-	-	-	-	0	3	$I\frac{1}{2}$
4.	-	-	-	-	-	-	-	-	0	4	$0\frac{1}{2}$
5.	-	-	-	-	-	-	-	-	0	4	$I\frac{1}{2}$
6.	-	-	-	-	-	-	-	-	0	4	$I\frac{1}{2}$
7.	-	-	-	-	-	-	-	-	0	5	0
8.	-	-	-	-	-	-	-	-	0	5	I

9.

10.

Seed and produce proportioned to the acre are as follow :

							P.	Q.	P.
N ^o 1.	Produce,	-	-	-	-	-	1	3	1
	Seed,	-	-	-	-	-	0	2	0
Clear produce,							1	1	1
2.	Produce,	-	-	-	-	-	1	4	2
	Seed,	-	-	-	-	-	0	2	2
Clear produce,							1	2	0
3.	Produce,	-	-	-	-	-	2	2	3
	Seed,	-	-	-	-	-	0	3	2
Clear produce,							1	7	0
4.	Produce,	-	-	-	-	-	2	5	1
	Seed,	-	-	-	-	-	0	4	2
Clear produce,							2	0	3
5.	Produce,	-	-	-	-	-	2	7	3
	Seed,	-	-	-	-	-	0	5	0
Clear produce,							2	2	3
6.	Produce,	-	-	-	-	-	2	7	3
	Seed,	-	-	-	-	-	0	5	2
Clear produce,							2	2	1
7.	Produce,	-	-	-	-	-	3	1	0
	Seed,	-	-	-	-	-	0	6	0
Clear produce,							2	3	0
8.	Produce,	-	-	-	-	-	3	3	2
	Seed,	-	-	-	-	-	0	6	2
Clear produce,							2	5	0
							9. Pro-		

							P.	Q.	P.
9. Produce,	-	-	-	-	-	-	3	4	3
Seed,	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	2	5	3
10. Produce,	-	-	-	-	-	-	3	6	0
Seed,	-	-	-	-	-	-	0	7	2
Clear produce,	-	-	-	-	-	-	2	6	2

OBSERVATIONS.

From hence it appears that the most beneficial quantity is not confined to seven bushels, but extends to seven and an half. Such variations are to be expected: however, it thus far appears, that the most beneficial portion is from seven to seven and an half; which would be coming very near the mark, if we were to stop here.

EXPERIMENT N° 5.

In March 1766, marked ten square perches of turnep-land in field L*, and sowed them with the following portions of seed:

- N° 1. With 1 pint.
2. With $1\frac{2}{3}$ ditto.
3. With $1\frac{4}{5}$ ditto.
4. With 1 quart.
5. With 1 ditto and $\frac{2}{5}$ of a pint.
6. With 1 ditto and $\frac{4}{5}$ ditto.
7. With 2 quarts.
8. With 2 quarts and $\frac{1}{5}$ ditto.
9. With 2 ditto and $\frac{2}{5}$ ditto.
10. With 2 ditto and $\frac{3}{5}$ ditto.

The culture and management the same. The produce as follows:

							P.	Q.	P.
N° 1.	-	-	-	-	-	-	0	2	0
2.	-	-	-	-	-	-	0	2	$1\frac{1}{2}$
3.	-	-	-	-	-	-	0	3	$1\frac{1}{2}$
4.	-	-	-	-	-	-	0	4	0
5.	-	-	-	-	-	-	0	4	$1\frac{1}{2}$
6.	-	-	-	-	-	-	0	5	$0\frac{1}{2}$
Vol. I.									7.

	P.	Q.	P.
7.	0	4	0
8.	0	3	1
9.	0	3	0
10.	0	1	1½

Seed and produce, proportioned *per* acre, are as follows :

	Q.	B.	P.
N ^o 1. Produce,	1	2	0
Seed,	0	2	2
Clear produce,	0	7	2
2. Produce,	1	5	3
Seed,	0	3	2
Clear produce,	1	2	1
3. Produce,	2	2	3
Seed,	0	4	2
Clear produce,	1	6	1
4. Produce,	2	4	0
Seed,	0	5	0
Clear produce,	1	7	0
5. Produce,	2	7	3
Seed,	0	6	0
Clear produce,	2	1	3
6. Produce,	3	2	1
Seed,	0	7	0
Clear produce,	2	3	1
7. Produce,	2	4	0
Seed,	1	2	0
Clear produce,	1	2	0

8. Pro-

							2	B.	P.
8. Produce,	-	-	-	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	1	2	2
Clear produce,	-	-	-	-	-	-	0	7	0
9. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	1	3	0
Clear produce,	-	-	-	-	-	-	0	4	0
10. Produce,	-	-	-	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	1	3	2
Clear produce,	-	-	-	-	-	-	0	2	3

OBSERVATIONS.

This trial is very decisive.—Seven bushels the most advantageous; which is a confirmation of the result of the former ones: but the great falling-off from that quantity as the seed is increased, until the product does not even return it, is a very evident proof that the higher quantities are utterly improper. In these comparative experiments, when there is a gradual ascent, and then a descent, the mean point is always a matter of very clear and determinate authority.

EXPERIMENT N° 6.

At the same time as the preceding trial marked ten perches in field M*, on a piece of land that yielded white pease last year.—Sowed them with the following portions of seed:

- N° 1. With 1 pint.
2. With $1\frac{2}{5}$ ditto.
3. With $1\frac{4}{5}$ ditto.
4. With 1 quart and $\frac{2}{5}$ of a pint.
5. With 1 ditto and $\frac{3}{5}$ ditto.
6. With 1 ditto and $\frac{4}{5}$ ditto.
7. With 2 quarts.
8. With 2 ditto and $\frac{1}{5}$ ditto.
9. With 2 ditto and $\frac{2}{5}$ ditto.
10. With 2 ditto and $\frac{3}{5}$ ditto.

The produce as

The proportions *per* acre of the seed and produce are as follow:

		Q. B. P.		
N ^o 1. Produce,	-	-	-	1 2 0
Seed,	-	-	-	0 2 2
Clear produce,	-	-	-	7 2
2. Produce,	-	-	-	1 5 3
Seed,	-	-	-	0 3 2
Clear produce,	-	-	-	1 2 1
3. Produce,	-	-	-	2 1 2
Seed,	-	-	-	0 4 2
Clear produce,	-	-	-	1 5 0
4. Produce,	-	-	-	2 4 0
Seed,	-	-	-	0 6 0
Clear produce,	-	-	-	1 6 0
5. Produce,	-	-	-	2 6 2
Seed,	-	-	-	0 6 2
Clear produce,	-	-	-	2 0 0
6. Produce,	-	-	-	3 1 0
Seed,	-	-	-	0 7 0
Clear produce,	-	-	-	2 2 0
				7. Pro-

							Q.	B.	P.
7. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	1	2	0
Clear produce,	-	-	-	-	-	-	1	2	0
8. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	1	2	2
Clear produce,	-	-	-	-	-	-	1	1	2
9. Produce,	-	-	-	-	-	-	1	4	2
Seed,	-	-	-	-	-	-	1	3	0
Clear produce,	-	-	-	-	-	-	0	1	2
10. Seed,	-	-	-	-	-	-	1	3	2
Produce,	-	-	-	-	-	-	0	7	2
Clear produce,	-	-	-	-	-	-	0	4	0

OBSERVATIONS.

Seven bushels maintain the superiority: the very great quantities not returning even themselves, is proof sufficient that they are utterly ineligible; and the small ones are almost as exceptional.

GENERAL REMARK.

It appears very evidently from these trials, (and let me add, from others not inserted here) that the most advantageous quantity of seed-oats for an acre of land, is from seven to seven bushels and an half.

S E C T . V .

Of the TIME of SOWING.

THE experiments I made under this head were pretty numerous, but the bounds of the present work will not allow the insertion of them all. I shall therefore extract the principal, and particularly such as coincide with the general result of the whole.

EXPERIMENT N^o 1.

Early in the spring of 1765 marked a piece of summer-fallowed land in field M*, in which to try the time of sowing: struck drills a perch in length, and sowed each with three ounces of white oats: the drills two feet asunder: the variation only in the time of sowing as under:

- N^o 1. The 27th of February.
2. March 5th.
3. ——— 15th.
4. ——— 26th. The soil rather adhesive.

A fresh ploughing.

5. April 6th.
6. ——— 22d.
7. May 8th.

A fresh ploughing.

8. ——— 15th.

The drills were kept clean by hand-hoeing and weeding, which was equally performed to all. The product as follows:

Ounces.

N° 1.	-	-	-	-	-	-	-	-	-	14
2.	-	-	-	-	-	-	-	-	-	15
3.	-	-	-	-	-	-	-	-	-	16
4.	-	-	-	-	-	-	-	-	-	11
5.	-	-	-	-	-	-	-	-	-	10
6.	-	-	-	-	-	-	-	-	-	10
7.	-	-	-	-	-	-	-	-	-	9
8.	-	-	-	-	-	-	-	-	-	9

It appears from this trial, that March is the best season; even superior to February, and much better than either April or May. The equality of produce between some different periods, is a small contradiction, but not worthy of notice.

EXPERIMENT N° 2.

At the same time with N° 1, marked ten perch drills in field L*, and sowed them with three ounces at the following times.

- N° 1. February 27th.
2. March 15th.
3. ----- 30th.

A fresh ploughing.

4. April 6th.
5. --- 13th.
6. --- 22d.
7. May 2d.

Another ploughing.

8. --- 13th.
9. --- 21st.
10. --- 29th.

The hand-hoeing and cleaning the same to all, but executed at times proportioned to the growth: The produce as follows,

N° 1.	-	-	-	-	-	-	-	-	-	Ounces.	17
2.	-	-	-	-	-	-	-	-	-	-	11
3.	-	-	-	-	-	-	-	-	-	-	11
4.	-	-	-	-	-	-	-	-	-	-	9 $\frac{1}{2}$
5.	-	-	-	-	-	-	-	-	-	-	9
6.	-	-	-	-	-	-	-	-	-	-	8

7.	-	-	-	-	-	-	8
8.	-	-	-	-	-	-	8½
9.	-	-	-	-	-	-	6½
10.	-	-	-	-	-	-	6

The superiority of N° 1 is vastly greater than I should in reason have supposed, or the first trial allowed one to expect. But these variations are inseparable from trials in agriculture: the very trivial products of the latter numbers prove extremely plain, that April and May are too late to sow oats with advantage. The increase of tillage by no means answers the loss of time.

EXPERIMENT N° 3.

In 1766 marked some drills a perch long in field L*, at the following seasons sowed each with three ounces of white oats: the land yielded potatoes in 1765.

N° 1. February 17th.

2. ——— 24th.

3. March 5th. The weather remarkably fine.

4. ——— 12th. Ditto.

A fresh ploughing.

5. — 17th. Ditto.

6. April 10th. Succeeding very heavy rains, but the land dry enough to stir.

7. — 16th. Fine.

8. — 26th. Very dubious weather.

Another ploughing.

9. May 17th. Prevented till then by the extreme wetness of the weather.

10. — 29th. A very bad season.

Another ploughing.

11. June 7th.

12. — 13th.

Another ploughing.

13. — 20th.

14. — 25th.

The culture and management equal to all: The produce as follows,

									Ounces.
N° 1.	-	-	-	-	-	-	-	-	11 $\frac{1}{2}$
2.	-	-	-	-	-	-	-	-	12
3.	-	-	-	-	-	-	-	-	14
4.	-	-	-	-	-	-	-	-	12
5.	-	-	-	-	-	-	-	-	11
6.	-	-	-	-	-	-	-	-	9 $\frac{1}{2}$
7.	-	-	-	-	-	-	-	-	9
8.	-	-	-	-	-	-	-	-	8
9.	-	-	-	-	-	-	-	-	8
10.	-	-	-	-	-	-	-	-	6
11.	-	-	-	-	-	-	-	-	5
12.	-	-	-	-	-	-	-	-	3 $\frac{1}{2}$
13.	-	-	-	-	-	-	-	-	2 $\frac{1}{4}$
14.	-	-	-	-	-	-	-	-	2 $\frac{1}{4}$

The beginning of March being a fine season is in this trial far beyond any other time for sowing, exceeding February, which is so far a confirmation of the former experience; the latter sown perches are evidently worthless.

EXPERIMENT N° 4.

At the same time with N° 3 marked the fifteen perches in field M*, and sowed each with three ounces of white oats, at the following times:

N° 1. February 17th.

2. ——— 23d.

3. March 5th.

4. ——— 11th.

A fresh ploughing.

5. ——— 16th.

6. April 10th.

7. ——— 16th.

8. ——— 26th.

Another ploughing.

9. May 17th.

10. ——— 29th.

Another ploughing.

- 11. June 7th.
- 12. — 13th.
- 13. — 20th.
- 14. — 25th.
- 15. — 31st.

The management exactly the same: The produce:

																		Ounces.
N	1.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
	2.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11
	3.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15
	4.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 $\frac{1}{2}$
	5.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10 $\frac{1}{2}$
	6.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8 $\frac{1}{4}$
	7.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7 $\frac{1}{2}$
	8.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	9
	9.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6 $\frac{1}{2}$
	10.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5 $\frac{1}{2}$
	11.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4 $\frac{1}{2}$
	12.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4 $\frac{3}{4}$
	13.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3
	14.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	15.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1

Nothing can be clearer than the result of this trial: it confirms the preceding, and proves very strongly the necessity of early sowing. N° 8 breaks the descent, but such variations when they do not quite break the effect are not of consequence.

GENERAL OBSERVATIONS.

From my experiments under this head, I have in general found that the best season for sowing white oats varies from the end of February to the beginning of March, including a season of about three weeks: the result of many trials does not fix it to either of the two. But later sowings are infallibly attended with poorer crops: I need not remark that a farmer is not to regulate himself by the name of the month, but by the state of his soil: all that these trials pretend to prove is, that when the land

land is in an equal state, at two seasons the early sowing will be the best, but an April seed-time in dry weather, may certainly be superior to a March one that is wet. The number of ploughings appear to be attended with no effect that counteracts that of season.

As to black oats, it is universally known, that they will admit sowing much earlier on a medium than white; so that if early sowing be most advantageous to the latter, it must certainly be so to the former. Reason proves this sufficiently, without inserting any experiments.

C H A P. IV.

Of BUCKWHEAT.

MY Experiments on this grain are not of equal extent with those on the preceding articles, but yet I enter on the subject with particular pleasure, for the culture is very uncommon in Suffolk, and I have since found it equally scarce in other parts of the kingdom. This neglect of buckwheat, the following trials will prove to be very undeserved.

EXPERIMENT N^o I.

Culture, expences, and produce of ten perches, field M*, 1764.

CULTURE.

This piece received the first ploughing in October 1762: during the following summer it was fallowed, receiving five ploughings: the seventh earth was given in March 1764; in April another stirring was given. The ninth the first week in May, after which it was harrowed, and sown with a quarter of a peck of seed. The plants arose very favourably, and though I expected that the quantity of seed was too small, (it was what I was informed was the practice of some farmers in the very sandy parts of Norfolk) yet the plants came up thick enough to the eye. Mown in August, the produce two bushels and a peck, The proportions *per* acre are as follow:

EXPENCES.

EXPENCES.

							£.	s.	d.
Nine ploughings,	-	-	-	-	-	-	0	9	0
Harrowing,	-	-	-	-	-	-	0	0	2
Seed, 1 bushel,	-	-	-	-	-	-	0	2	0
Sowing,	-	-	-	-	-	-	0	0	3
Mowing,	-	-	-	-	-	-	0	1	0
Harvesting,	-	-	-	-	-	-	0	1	6
Threshing,	-	-	-	-	-	-	0	4	6
							<hr/>		
Rent, &c.	-	-	-	-	-	-	0	18	5
							1	17	0
							<hr/>		
							2	15	5
							<hr/>		

PRODUCE.

4 Quarters 4 bushels at 16 s.	-	-	-	-	-	-	3	12	0
Expences,	-	-	-	-	-	-	2	15	5
							<hr/>		
Profit,	-	-	-	-	-	-	0	16	7
							<hr/>		
Ploughing,	-	-	-	-	-	-	£.	s.	d.
Harrowing,	-	-	-	-	-	-	0	13	6
Carting in harvest,	-	-	-	-	-	-	0	0	3
							0	0	3 $\frac{3}{4}$
							<hr/>		
							0	14	0 $\frac{3}{4}$
							<hr/>		
Clear profit,	-	-	-	-	-	-	0	2	6 $\frac{1}{4}$
							<hr/>		

OBSERVATIONS.

The profit upon this crop is very trifling, and yet it was by no means a bad one; four and half quarters *per* acre are a considerable produce, tho' not of buckwheat as I am informed. But it is a question whether this grain requires so much ploughing: but this point requires experience to discover.

EXPERIMENT N° 2.

Culture, expences, and produce of half a rood, field L*, 1764.

CULTURE.

CULTURE.

This piece yielded white pease in 1763, the stubble of which was ploughed up in October, on to the ridge, and water-furrowed to lay dry in the winter. In April it was stirred again, and a third time the 11th of May, when half a peck of seed was harrowed in. This crop flourished very well throughout the season; was mown the beginning of August; produce four bushels and three pecks. The proportions *per* acre as follow:

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	1½
Seed,	0	2	0
Sowing,	0	0	3
Water-furrowing,	0	0	6
Mowing,	0	1	0
Harvesting,	0	2	0
Threshing,	0	4	4½
	<hr/>		
Rent, &c.	0	13	3
	0	17	0
	<hr/>		
	1	10	3

PRODUCE.

4 Quarters 6 bushels at 16 s.	3	16	0
Expences,	1	10	3
	<hr/>		
Profit,	2	5	9
	<hr/>		
	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	2¼
Carting in harvest,	0	0	3¾
	<hr/>		
	0	3	6
	<hr/>		
Clear profit,	2	2	3
	<hr/>		

OBSERVATIONS.

This crop is a considerable one, and very profitable compared with what a barley one might be supposed on this land, without other management. And it is pretty evident from this trial, that buckwheat does not require so much fallowing and tillage as barley: from the preceding trial not yielding so good a crop as this, there is reason to suppose the produce not the greater for it.

EXPERIMENT N^o 3.

Culture, expences, and produce of half a rood, field L*, 1765.

CULTURE.

This piece yielded turneps in 1764, which were drawn for cattle in December. In March ploughed up the land; gave it another earth in April, and a third in May, the middle of which month sowed it with half a peck of seed, and harrowed it fine. I should remark that the turneps were dunged for in the common manner. The crop made a very good appearance through the season: it was mown the middle of August: product five bushels.

EXPENCES.

								£.	s.	d.
Four ploughings,	-	-	-	-	-	-	-	0	4	0
Three Harrowings,	-	-	-	-	-	-	-	0	0	4
Seed,	-	-	-	-	-	-	-	0	2	0
Sowing,	-	-	-	-	-	-	-	0	0	3
Water-furrowing,	-	-	-	-	-	-	-	0	0	6
Mowing,	-	-	-	-	-	-	-	0	1	0
Harvesting,	-	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	-	0	5	0
								<hr/>		
								0	14	1
Rent,	-	-	-	-	-	-	-	0	17	0
								<hr/>		
								1	11	1
								<hr/>		

PRO-

PRODUCE.

	£.	s.	d.
5 quarters at 24 s.	6	0	0
Expences,	1	11	6
Profit,	4	8	6
Ploughing,	0	9	7
Harrowing,	0	1	1½
Carting in harvest,	0	0	6½
	0	11	3
Clear profit,	3	17	3

OBSERVATIONS.

This is a very considerable profit, and much more than I should have reaped from barley, without a better preparation: and one circumstance I find of particular importance, which is the late sowing. Buckwheat, from all the information I have been able to gain, should not, from the tenderness of its nature, be sown before the middle of May. The greatness of this crop shews that such a seed-time is by no means improper. Now this is a most important point upon our soils, which will not, in many seasons, admit of an early spring tillage: a circumstance that ruins half our barley crops from late sowing. When that grain or oats are not sown, it is of consequence to have a succedaneum.

EXPERIMENT N° 4.

Culture, expences, and produce of ten perches, field L*, 1765.

CULTURE.

I marked this piece, to give buckwheat a fair trial as to manuring; which I take to be, in this case, as in most others, the most important part of the cultivation, and superior to tillage. It yielded turneps in complete management in 1764, both as to tillage and manure. They were drawn for cattle in January. In March the land received the first ploughing; another in April; and ploughed and sowed the middle of May a quarter of a peck of seed, and harrowed it fine. The plants arose quickly, and flourished away in a very beautiful manner: the ground so
fully

fully stocked, as to convince me, that a bushel an acre must, in most cases, be a sufficient quantity of seed. Mown the middle of August. Product four bushels and two pecks. The proportions *per* acre as follow :

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Three harrowings,	0	0	4
Seed,	0	2	0
Sowing,	0	0	3
Water-furrowing,	0	0	6
Mowing,	0	1	2
Harvesting,	0	1	6
Threshing,	0	9	0
	<hr/>		
Rent, &c.	0	17	9
	0	17	0
	<hr/>		
	1	14	9

PRODUCE.

9 quarters at 24 s.	10	16	0
Expences,	1	14	9
	<hr/>		
Profit,	9	1	3
	<hr/>		
	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	1	1 $\frac{1}{2}$
Carting in harvest,	0	0	6 $\frac{1}{2}$
	<hr/>		
	0	8	10 $\frac{1}{4}$
	<hr/>		
Clear profit,	8	12	4 $\frac{1}{4}$

OBSERVATIONS.

This trial is of decisive authority in proving buckwheat to be a most important object in husbandry. The profit of the crop before us is extremely great; greater, I apprehend, than most other spring crops would in the same case have given. It is of importance in such an enquiry to discover whether a vegetable will answer the being sown on land in excellent

cellent order: and we here find, that buckwheat will repay the farmer for such attention as well as any other common crop.

EXPERIMENT N^o 5.

March 18th 1765, ploughed up a piece of turnep-land, field R. Again, the 9th April, with two ploughs, to the depth of 15 inches; the land-working very fine. The 18th gave it a common ploughing, and harrowed it. May 10th ploughed it the fourth time. The 11th harrowed it, and sowed seven square roods with buckwheat. The weather was extremely fine, without any rain, till the 23d; the wind N. and E. and after that day very cold. The 26th the plants came up; but the cold winds continuing, they looked very sickly. They were hand-weeded and hoed the middle of July, and on the 15th of August I mowed the piece. The 21st carried the produce, and threshed it directly. The quantity was one peck and an half, cleaned from chaff, or one quarter two pecks. A miserable crop!—three, four, or five quarters *per acre* being the common produce. It was sowed as thick as barley generally is. I attribute the ill success of the experiment to the deep ploughing and over-feeding.

PROPORTIONS *per Acre*.

EXPENCES.

Ploughing,	-	-	-	-	£	5	6	0
Two harrowings,	-	-	-	-	0	0	4	0
2 bushels seed,	-	-	-	-	0	6	0	0
Sowing,	-	-	-	-	0	0	3	0
Weeding and hoeing,	-	-	-	-	0	6	0	0
Mowing,	-	-	-	-	0	1	0	0
Harvesting, &c.	-	-	-	-	0	2	0	0
Threshing,	-	-	-	-	0	1	3	0
								<hr/>
Rent, &c.	-	-	-	-	1	2	10	0
								<hr/>
								1 17 0
								<hr/>
								1 19 10

PRODUCT.

	£.	s.	d.
1 quarter 2 pecks,	-	-	5 6
Loss,	-	-	0 14 4
Ploughing,	0	6	0
Harrowing,	0	0	4 1/2
Carting in harvest,	0	0	6 1/2
Loss,	-	-	1 1 3

EXPERIMENT N° 6.

November 8th, 1764, ploughed up the stubble of a barley-field T; and again the 29th of April. May 3d harrowed it. The 10th ploughed it again. The 13th another ploughing; also harrowed it, and sowed ten square perches with one peck of buckwheat. The 28th the plants came up: they never carried near so flourishing an appearance as those in N° 5: were weeded the middle of July: mowed the 15th of September; the crop so extremely thin and poor, that it was not worth the raking together. Buckwheat delights in a dry soil; but as this summer was attended with so constant a drought, I imagined that the moisture and richness of the soil would push on the crop to great advantage: but I was totally mistaken in my conjecture; for the hot soil of N° 5. produced a much better crop.

EXPERIMENT N° 7.

Culture, expences, and produce of two acres, field G*, 1766.

CULTURE.

Ploughed it the 14th of April: harrowed it the 19th: ploughed it May 16th, sowing it with four bushels of buckwheat, and harrowing it twice in a place: mowed it August 27th: carried home September 13th. Product 3 quarters 7 bushels: of the best three quarters, and of screenings 7 bushels.

D d 2

EXPENCES.

Two ploughings,	-	-	-	-	-	0	12	0
Ditto harrowings,	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	0	0	4
Sowing,	-	-	-	-	-	0	3	6
Mowing,	-	-	-	-	-	0	4	6
Harvesting,	-	-	-	-	-	0	0	0
Threshing,	-	-	-	-	-	0	0	0

The piece yielded potatoes in 1765, without any manure. They were taken up in October, and the land ploughed on to the ridge. In April it was sowed again, and a third time in the middle of May, when it was taken up with half a peck of seed, and harrowed thrice. The crop flourished very well, but weeds rising, I bestowed a slight weeding by hand on it. Mown in August.		Product	On it.
8	4		
1	4		
3	2		

Rent, &c.

3 quarters at 24 s.	-	-	-	-	3	12	0
7 bushels screenings,	-	-	-	-	0	15	0

	-	-	-	-	-	-	47 ⁰ / ₁₀₀
Expences,	-	-	-	-	-	-	32 ⁴ / ₁₀₀

Profit 12 s. 4 d. <i>per acre</i> ,	-	-	-	I 4 8
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Ploughing,	-	-	-	-	£.	s.	d.
Harrowing,	-	-	-	-	0	9	7
Carting in harvest,	-	-	-	-	0	1	6
					0	1	1
					<hr/>		
						0	12 2

Profit 6 s. 3 d. <i>per acre</i> ,	-	-	-	-	-	0	12	6
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Although the burning drought of the preceding year was too powerful for this plant, yet it undoubtedly is a crop that will not bear much wet: this appears from the extreme dry sandy lands in which it is chiefly sown. This was a remarkable wet season; and I should observe, that about half an acre of it was so over-run with weeds, such as ketlock, mayweed, &c. owing to the perpetual showers, that the buckwheat could scarcely be perceived. Notwithstanding these circumstances, the crop

crop was much more profitable than many of my barley ones this year, that were sown on better land, and after a complete fallow: from which, I think, we may venture to judge, that buckwheat is not cultivated in these kind of soils near so much as it deserves: indeed it is scarcely known in them.

EXPERIMENT N^o 8.

Culture, expences, and produce of half a rood, field L*, 1766.

CULTURE.

This piece yielded potatoes in 1765, without any manure. They were taken up in October, and the land ploughed on to the ridge. In April stirred it again, and a third time in the middle of May; when it was sown with half a peck of seed, and harrowed thrice. The crop flourished very well; but weeds rising, I bestowed a slight weeding by hand on it. Mown in August. The crop four bushels.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Three harrowings,	0	0	5
Seed,	0	3	0
Sowing,	0	0	3
Water-furrowing,	0	0	6
Weeding,	0	1	6
Mowing,	0	1	0
Harvesting,	0	1	9
Threshing,	0	4	0
	0	15	5
Rent, &c.	0	17	0
	1	12	5

PRODUCE.

4 quarters at 24 s.	4	16	0
Expences,	1	12	5
Profit,	3	3	7
			Ploughing,

OBSERVATIONS.

EXPERIMENT N° 9.

CULTURE.

EXPENCES.

[illegible]

	£.	s.	d.
Mowing,	0	1	3
Harvesting,	0	2	0
Threshing,	0	9	0
	0	19	3
Rent, &c.	0	17	0
	1	16	3
PRODUCE.			
9 quarters at 24s.	10	16	0
Expences,	1	16	3
Profit,	8	19	9
Ploughing,	0	7	3 $\frac{3}{4}$
Harrowing,	0	1	1 $\frac{1}{2}$
Carting in harvest,	0	0	6 $\frac{1}{2}$
	0	8	11 $\frac{3}{4}$
Clear profit,	8	10	9 $\frac{1}{4}$

OBSERVATIONS.

This experiment is a fresh proof that buckwheat may be depended upon in respect of profit, let the soil be as rich as it may; and also that the common idea of its thriving only on poor sands, is an absurdity. Indeed I have not yet met with the vegetable that prefers a poor to a rich soil. I will not, in the case of these trials, where the land is excessive rich, draw a comparison between buckwheat and barley, because the latter certainly may equal it; but the profit of it is, nevertheless, such as requires a trial, in every case, on all soils; because on some it may be much superior: in the time of sowing it undoubtedly is.

GENERAL REMARKS.

From these experiments it clearly appears, that buckwheat is of very great importance to the farmer. In lands that are not in proper condition for barley, it will thrive to much greater profit than that grain, and, upon the richest soils, it will make an extremely profitable return; an advantage which is peculiar to it, and of great consequence to all soils that are wet, or apt to be very moist in spring, is, that it should not be sown

sown till May ; the middle or latter end the most proper season. In wet springs this is a most incomparable circumstance : unless the land is in very good heart, buckwheat pays better than barley well managed ; but a common crop is apparent, from these trials, to be infinitely beyond any crop of barley that is late sown. So that if the season has been so unfavourable as to prevent sowing barley or oats in the proper time, there can be no doubt of the propriety and benefit of substituting buckwheat in the room of it.

Respecting the price of this grain, I have charged it at that of middling barley ; which is the rate the little is sold at that ever comes to our markets ; and I find by experiment, that it is as good as barley for any cattle.

I have also found from various trials, that the buckwheat-straw, when it has been tolerably harvested, is very good food for lean cattle.

Another point of great importance, though not so much connected with the subject of this book, is, that this crop does not exhaust the soil nearly so much as any other grain. This is a matter of very great consequence, and not in general considered as it ought to be.

Upon the whole, I cannot but greatly recommend it, as an object greatly worth the attention of all the farmers in the kingdom, let their soil be whatever it may,

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EXPERIMENTAL
AGRICULTURE
BOOK

I do not in this book pretend to treat of every kind of pulse. My work is by no means intended as a complete system of husbandry. It is the register of my experiments, while the deficiencies I do not offer to supply the place, either by transcripts from other books, or by more reasonings. My experience on other extends no farther than pulse, beans, rices, and lentils; principally the two first. I shall in the trials in the same method I pursued with wheat.

BOOK II.

OF PULSE.

GENERAL IDEA.

I Do not in this book pretend to treat of every kind of pulse. This work is by no means intended as a complete system of husbandry. It is the register of my experiments: where they are deficient I do not offer to supply the place, either by transcripts from other books, or by mere reasonings. My experience on pulse extends no farther than pease, beans, tares, and lentils; principally the two first. I shall arrange the trials in the same method I pursued with wheat, &c. in the first book.

C H A P. I.

B O O K II.

Of P E A S E.

TH E R E is a confusion in all the books I have read concerning pease; the sorts are infinitely diversified, and in every county, almost in every hundred, they go under different names. This is not the case with any other grain or pulse in England. Mr. *Miller* out of sixteen sorts enumerates only three, which I apprehend to include all we cultivate; viz. the common white—the grey—and the pig pea. But the latter are alone subdivided in common practice into numerous sorts, visibly different in size, colour, and hardness. In common husbandry the two grand divisions are, the white pease, and hog pease. The first is generally known, I believe, by its proper name; but the other is divided in this country into grey pease, dun pease, blue pease, &c. and these again into other subdivisions: The greys are the larger kinds of hog pease, and the duns the smaller: blues are also small.

S E C T.

S E C T I.

CULTURE and PRODUCE in the Old Method.

IT will not be improper to remark here a general notion of the farmers in Suffolk, relative to all pea crops, that they are the most uncertain of all grain or pulse, and most dependant on the season. If this idea is a just one, it must in a course of several years experiments, be attended with very important effects, perhaps to the reducing to nothing all general conclusions: the fact by no means strikes me in this light, and particularly because I find by enquiry, that pease are never sown on land that is quite clean and in good heart, our farmers thinking such land will pay better in wheat and barley. A crop that is seldom or never sown on good and clean land, I doubt not will have many evils attributed to season.

EXPERIMENT N^o 1.

Culture, expences, and produce of half an acre, field T, 1764.

CULTURE.

This piece was fallow in 1763, the first ploughing was given in autumn 1762, on to the ridge. The summer following it had a common fallow, and sown in April 1764 with one bushel of white pease. Cut the first week in August: produce one quarter six bushels.

EXPENCES.

EXPENCES.

	£.	s.	d.
Six ploughings,	0	3	0
Harrowing,	0	0	2
Water furrowing,	0	0	6
Seed,	0	4	0
Sowing,	0	0	1 $\frac{1}{2}$
Cutting,	0	1	3
Harvesting,	0	0	9
Threshing,	0	1	9
	0	11	6 $\frac{1}{2}$
Rent, &c.	0	17	0

PRODUCE.

1 Quarter 6 bushels at 32 s.	2	16	0
Expences,	1	8	6 $\frac{1}{2}$
Profit,	1	7	5 $\frac{1}{2}$

	£.	s.	d.
Ploughing,	0	4	6
Harrowing,	0	0	3
Carting in harvest,	0	0	3 $\frac{3}{4}$
	0	5	0 $\frac{3}{4}$

Clear profit 2 l. 4 s. 9 $\frac{1}{2}$ d. per acre,	2	4	9 $\frac{1}{2}$
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OBSERVATIONS.

This half acre is situated in a dry part of the field, and consequently escaped the fate of much of my barley crop, which was spoiled by the wet. The profit is very considerable for land that had not been manured for some time, and naturally cold and poor. It is much superior to what the same land would have yielded under barley, in the opinion of my bailiff. And a circumstance of consequence is the idea that pease do not exhaust the soil like grain; so that any crop will be better after them than after grain, all other circumstances equal.

EXPERIMENT N^o 2.

Culture, expences, and produce of seven acres, field Y, 1765.

CULTURE.

Very little culture was bestowed on this crop. The field bore wheat in 1764, the stubble of which was turned up in January, and the second and last ploughing was between the 19th and 23d of April; and on the 3d of May two quarters and an half of dun pease were harrowed in. They afterwards received one common weeding. In 1759 the field was fallowed. In 1760 barley. 1761 clover. 1762 wheat. 1763 fallow.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	14	0
Harrowing,	0	3	0
Seed,	2	10	0
Weeding,	0	9	6
Harvesting,	1	11	9
Threshing 16 quarters 4 bushels, 11 quarters 2 bushels at 1 s. and 5 quarters 3 bushels at 1 s. 2 d. †	0	17	6
	6	5	9
Rent, &c.	5	19	0
	12	4	9

PRODUCE.

16 Quarters 4 bushels at 30 s.	24	18	9
Expences,	12	4	9
Profit 1 l. 16 s. 2 d. per acre,	12	14	0
	£.	s.	d.
Ploughing,	0	14	0
Harrowing,	0	3	11 ¹ / ₄
Carting in harvest,	0	3	9 ¹ / ₂
	1	1	8 ¹ / ₄
Profit 1 l. 13 s. 2 ¹ / ₄ d per acre,	11	12	3 ¹ / ₄

† This difference was owing to the 5 quarters 3 bushels being laid on the threshing floor, and only a small vacancy left to begin the threshing, which generally makes 1 d. per comb advance.

OBSERVATIONS.

A crop of two quarters three bushels *per* acre this year, when most crops in the neighbourhood produced but little, I think a very good increase; especially considering the land was poor and sowed after wheat, with only two ploughings. Such a produce of a species that leaves the land in better order than it found it, must be regarded as very good.

The pease being only harrowed in was a circumstance greatly in their favour; for on the 9th of May came a prodigious heavy shower, succeeded by hot weather, so that the surface of most fields was incrustated; had they been sown under furrow half would not have got through the incumbent mould.

EXPERIMENT N^o 3.

Culture, expences, and produce of one acre, field T, 1765.

CULTURE.

This part of the field which yielded barley in 1764, was ploughed up in October for the first time, on to the ridge. It was stirred again in March, and in April ploughed and sown with three bushels of white pease. They were hooked in August; the produce two quarters.

EXPENCES.

							£.	s.	d.
Three ploughings,	-	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	-	0	0	2
Water furrowing,	-	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	-	0	12	0
Sowing,	-	-	-	-	-	-	0	0	3
Hooking,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	1	9
Threshing,	-	-	-	-	-	-	0	2	3
									<hr/>
							1	2	2
Rent,	-	-	-	-	-	-	0	17	0
									<hr/>
							1	19	2

PRO-

PRODUCE.

	£	s.	d.
2 Quarters at 32 s.	3	4	0
Expences,	1	19	2
Profit,	1	4	10½
<hr/>			
	£	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	5
Carting in harvest,	0	0	6½
	0	3	11½
Clear profit,	1	0	10½

OBSERVATIONS.

Considering this is a second crop, the profit is by no means trifling: of grain it would not have been near so much. The common opinion in this country is, that white pease require a very light, dry, and sound land; not thriving to any profit on clays and moist loams. What the produce is on such soils I know not, but it is evident from these trials, that it is a very advantageous crop on these brick-earth loams or clays.

EXPERIMENT N° 4.

Culture, expences, and produce of six acres, field X, 1766.

CULTURE.

In 1761 fallow. 1762 wheat. 1763 barley. 1764 fallow. 1765 wheat.

The wheat stubble ploughed up the beginning of December. Stirred again the 22d of April; and a third time the 2d of May, and the 7th harrowed in two bushels of pease *per* acre, going over them twice. The very heavy rains which succeeded, prevented my water-furrowing it until the 19th, &c. clover was sown amongst them. By the 15th of July I found there would be a crop of nothing but trumpery and clover, which induced me to mow it: afterwards the clover grew prodigiously and was of considerable service to me in feeding my cattle. I state the expences of this experiment for a purpose which does not fully appear in this place.

EXPENCES.						£. s. d.		
Three ploughings,	-	-	-	-	-	0	18	0
Harrowing,	-	-	-	-	-	0	2	6
Twelve bushels of pease,	-	-	-	-	-	2	5	0
Sowing,	-	-	-	-	-	0	1	6
Water-furrowing,	-	-	-	-	-	0	4	9
Mowing,	-	-	-	-	-	0	5	0
						<hr/>		
						3	16	9
Rent, &c.	-	-	-	-	-	5	2	0
						<hr/>		
Loss 1 l. 9 s. 9 d. per acre.						8	18	9

						£. s. d.		
Ploughing,	-	-	-	-	-	2	3	1½
Harrowing,	-	-	-	-	-	0	6	9
						<hr/>		
						2	9	10½
Loss 1 l. 18 s. 1 d. per acre,						<hr/>		
						1	1	8 7½

OBSERVATIONS.

I should first remark, that although I have charged the whole year's loss in this place, without return; yet was not the field without yielding one, viz. the clover feed; but as it would be an impropriety to minute the cattle maintained by it under the article *Pease*, I have registered it in its proper place. The occasion of the crop's failing so totally, was not only the wetness of the season, but much of the seed being carried off by pigeons, notwithstanding a boy's being kept on purpose to frighten them. This is one of the cases in which too much seed had better be sowed than too little.

EXPERIMENT N° 5.

Culture, expences, and produce of an acre, field Q, 1766.

CULTURE.

This piece was summer fallowed in 1765. The first tillage began in 1764, when it was ridged up for the winter, and water-furrowed. In April following it received the first spring tillage: In May it had the third earth; in the three next months it received three more ploughings. The

The seventh was given in September, throwing it again on to the ridge. The latter end of February ploughed and sowed four bushels of the large hog pea, ploughed the seed in and water-furrowed the piece. Many weeds rising in the succeeding months, I had it hand-hoed. Hooked the crop the middle of August. The produce five quarters six bushels.

EXPENCES.

	£.	s.	d.
Eight ploughings,	0	8	0
Water-furrowing,	0	1	6
Seed,	0	14	0
Sowing,	0	3	0
Hand-hoeing,	0	4	9
Hooking,	0	2	6
Harvesting,	0	1	9
Threshing,	0	5	9
	2	1	3
Rent,	1	14	0
	3	15	3

PRODUCE.

5 quarters 6 bushels at 28 s.	8	1	0
Expences,	3	15	3
Profit,	4	5	9
	£.	s.	d.
Ploughing,	0	19	2
Carting in harvest,	0	0	6½
	0	19	8½
Clear profit,	3	6	0½

OBSERVATIONS.

This crop is an excellent one, and the profit very considerable: much greater than I have made in general from any grain or pulse. The soil of the field is strong, and, by report, suits this kind of pea; but at the same time I have no accounts of any considerable manuring, and the whole field wants hollow draining very much: upon the whole,

the crop is greater than I had reason to expect, for the yielding a clear profit of above three pounds an acre, after paying the expence of a fallow, is a very profitable husbandry in any country.

EXPERIMENT N^o 6.

Culture, expences, and product of a rood, field L*, 1766.

CULTURE.

This rood I prepared through the year 1765, among many others with complete management in respect both of tillage and manure, ready for any crop I might throw in. The ploughing began in autumn 1764, when it was ploughed on to the ridge. In March 1765 it was manured with four loads of town dung. By the 14th of August it received four ploughings more. The first week in September it was again manured with the same quantity of the same manure, and in October it was thrown on to the ridge for the winter; and in March was ploughed and sown with half a bushel of white pease, and manured with ten bushels of foot. In August it was hooked and threshed: the produce two quarters one peck.

EXPENCE.

								£.	s.	d.
Seven ploughings,	-	-	-	-	-	-	-	0	1	9
One harrowing,	-	-	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Seed,	-	-	-	-	-	-	-	0	2	3
Sowing,	-	-	-	-	-	-	-	0	0	0 $\frac{3}{4}$
First manuring,	-	-	-	-	-	-	-	1	3	0
Second ditto,	-	-	-	-	-	-	-	1	3	0
Third ditto,	-	-	-	-	-	-	-	0	6	0
Water-furrow,	-	-	-	-	-	-	-	0	0	6
Hooking,	-	-	-	-	-	-	-	0	0	9
Harvesting,	-	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	-	0	2	2
								<hr/>		
Rent, &c.	-	-	-	-	-	-	-	3	0	3 $\frac{1}{4}$
								0	8	6
								<hr/>		
								3	8	9 $\frac{1}{4}$

PRO-

PRODUCE.

2 Quarters 1 peck at 29 s.	-	-	-	-	£.	s.	d.
					3	0	0
Loss,	-	-	-	-	0	8	9 $\frac{1}{4}$
					£.	s.	d.
Ploughing,	-	-	-	-	0	4	2 $\frac{1}{4}$
Harrowing,	-	-	-	-	0	0	1
Manuring,	-	-	-	-	1	9	7
Carting in harvest,	-	-	-	-	0	0	1 $\frac{1}{2}$
					<hr/>		
					1	13	11 $\frac{3}{4}$
Total loss 8 l. 11 s. per acre.	-	-	-	-	<hr/>		
					2	2	9
					<hr/>		

OBSERVATIONS.

Upon this trial which is attended with so great a loss, I should remark, that the burthen of straw was extravagantly great; so that there was a large waggon load of it upon this rood, which is a vast deal: and much of it that laid against the ground was half rotten: this spoiled much of the corn, for none was gained in good order, but that which grew on these parts of the stalks which were uppermost. My bailey when he found that I sowed a piece of ground so richly manured with pease, foretold that I should have no crop *it would be so rank*: his reasoning was good; although the crop with all the disadvantages was a very great one: but one circumstance convinces me that if the pease were supported and kept from the ground, the justness of the objection would be removed; for I have no notion of a luxuriant growth of straw without corn, no more than of vigorous stems of trees without branches. This idea however did not first occur to me from this crop; for I have now upon the ground some immense crops, in experiments in small, that have been managed upon this plan; but how far it will answer to extend the culture from *small* to *great*, is a question which I cannot at present resolve. These small trials I shall lay before the reader in the proper place.

EXPERIMENT N° 7.

Culture, expences, and produce of a rood, field M*, 1766.

CULTURE.

CULTURE.

This rood yielded carrots in 1765 in complete management, which were taken up in October, and the land ploughed on to the ridge. In March it had a second earth, and was ploughed and sowed with white pease the beginning of April, using three pecks of seed. Nothing could make a finer appearance throughout the season. They were hooked the first week in August: Produce one quarter four bushels and two pecks.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	0	9
Two harrowings,	0	0	1
Seed and sowing,	0	3	3
Cutting,	0	0	8
Harvesting.	0	0	9
Threshing.	0	1	8
	<hr/>		
Rent, &c.	0	7	2
	0	4	3
	<hr/>		
	0	11	5

PRODUCE.

1 Quarter 4 bushels and $\frac{1}{2}$ at 30s.	2	6	10
Expences,	0	11	5
Profit,	1	15	5
	<hr/>		
	£.	s.	d.
Ploughing,	0	1	9 $\frac{3}{4}$
Harrowing,	0	0	2
Carting in harvest,	0	0	1 $\frac{1}{2}$
	<hr/>		
	0	2	1 $\frac{1}{4}$
	<hr/>		
Clear profit 6 l. 13 s. 3 d. <i>per</i> acre,	1	13	3 $\frac{3}{4}$

OBSERVATIONS.

This crop is a very considerable one, and shews that pease will repay the advantage of being sown on land in great heart as well as most crops. Common farmers are under a mistake in not preparing for them with greater

greater attention. I should further remark, that this crop like some of the preceding ones, suffered from being laid to the ground by the rains and the great weight of straw: they were so thick upon the land, that after harvest I do not think an handful of weeds could have been picked up over the whole rood: the straw had smothered every thing, so that no thistle or other strong weed had been able to survive the attack, and shoot through the pease, which is rather uncommon. The surface of land was quite in a state of pulverization; so mellow and loose. This is not however the place to inquire into the value of a crop relative to others that succeed, which is a very important part of husbandry and deserves much attention.

EXPERIMENT N^o 8.

Culture, expences, and produce of a rood, field L*, 1767.

CULTURE.

This rood was twice cropped in the complete culture of both tillage and manure; the first barley, for which the manure was laid on; the second turneps, and now white pease. The turneps were drawn for cattle in January; and the land ploughed on to the ridge in March. In April ploughed and sowed, harrowing in at twice a bushel of seed. They had one weeding; were hooked the beginning of August: the produce one quarter one bushel.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	6
Harrowing,	0	0	0 $\frac{1}{2}$
Seed,	0	3	6
Sowing,	0	0	0 $\frac{3}{4}$
Water-furrowing,	0	0	1
Weeding,	0	0	9
Hooking,	0	0	9
Harvesting,	0	0	9
Threshing,	0	1	1 $\frac{1}{2}$
	0	7	6 $\frac{3}{4}$
Rent, &c.	0	4	3
	0	11	9 $\frac{3}{4}$

PRO-

PRODUCE.

						£.	s.	d.
1 Quarter 1 bushel at 28 s.	-	-	-	-	-	1	11	6
Expences,	-	-	-	-	-	0	11	9 $\frac{1}{4}$
Profit,	-	-	-	-	-	0	19	8 $\frac{1}{4}$
<hr/>								
						£.	s.	d.
Ploughing,	-	-	-	-	0	1	2 $\frac{1}{2}$	
Harrowing,	-	-	-	-	0	0	2 $\frac{1}{4}$	
Carting in harvest,	-	-	-	-	0	0	1 $\frac{1}{2}$	
						0	1	6 $\frac{1}{4}$
Clear profit 3 l. 12 s. 8 d. <i>per acre</i> ,	-	-	-	-	-	0	18	2

OBSERVATIONS.

This is a very considerable crop, and the profit far exceeding that of any commonly managed ones. We find from it, that the complete management lasts in great heart three years; and from viewing this crop of pease attentively, and examining the stubble, I have little doubt but the land would yield an excellent wheat-crop on one ploughing; though I should not sow that grain upon it, if I staid here, but rather plant it next year with cabbages or some other crop that admits much cleaning at the same time that it ameliorates. I should observe that this has not been a favourable pea season, so that gaining such a great crop, gives one no slight reason to conclude, that the great uncertainty of this vegetable is owing in a good measure to the slovenly husbandry of common farmers.

EXPERIMENT N^o 9.

Culture, expences, and produce of 7 acres, field W, 1767.

CULTURE.

April 29th ploughed, sowed, and harrowed in fourteen bushels of small hog pease, the dun sort. Thiftled them in July: cut them Sept. 29th: produce eleven quarters three bushels.

EXPENCES.

EXPENCES.

	£	s.	d.
One ploughing,	0	7	0
Harrowing,	0	2	0
Seed,	2	9	0
Sowing,	0	1	9
Water-furrowing,	0	5	0
Rolling,	0	0	6
Thistling,	0	6	0
Frightening vermin,	0	6	0
Cutting,	0	17	6
Harvesting,	0	17	0
Threshing at 1 s. 6 d.	0	16	9
	<hr/>		
	6	8	6
Rent, &c.	5	19	0
	<hr/>		
	12	7	6

PRODUCE.

11 Quarters of pease,	13	10	0
Screenings,	0	6	0
	<hr/>		
	13	16	0
Expences,	12	7	6
	<hr/>		
Profit 4 s. 1 d. <i>per acre</i> ,	1	8	6

	£	s.	d.
Ploughing,	0	17	0 $\frac{3}{4}$
Harrowing,	0	7	10 $\frac{1}{2}$
Rolling,	0	0	3 $\frac{1}{2}$
Carting in harvest,	0	3	9 $\frac{1}{2}$
	<hr/>		
	1	9	0 $\frac{1}{4}$
The above profit,	1	8	6
	<hr/>		
Less,	0	0	6 $\frac{1}{4}$
	<hr/>		

OBSERVATIONS.

I believe this would have proved a very beneficial crop had the season been drier; for there was a great plenty of straw, but the pods did not fill well; owing I apprehend to the perpetual rains. The thistles were a proof that the horse-hoed oat crop was by no means so beneficial as a fallow; but must have been better than a common crop of them, and consequently leave the land in no very bad order for pease.

EXPERIMENT N° 10.

Culture, expences, and produce of a rood, field M*, 1767.

CULTURE.

This rood yielded barley in 1766. It was not in such great heart, or so clean as to render it good husbandry to sow it with pease, but I had an inclination to try them, with the assistance of a dressing of common farm yard manure. The stubble was ploughed up in October: another earth was given in March and four loads of dung spread; and a third in April, about the 10th, when a bushel of white pease was harrowed in. They were hand-hoed with small hoes once. Cut the beginning of August: the produce seven bushels.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	0	9
Harrowing,	0	0	0 $\frac{1}{2}$
Manuring,	0	1	6
Seed,	0	3	6
Sowing,	0	0	0 $\frac{3}{4}$
Hand-hoeing,	0	1	6
Cutting,	0	0	7 $\frac{1}{2}$
Harvesting,	0	1	0
Threshing,	0	1	2
	0	10	1 $\frac{3}{4}$
Rent,	0	4	3
	0	5	10 $\frac{3}{4}$

PRO-

PRODUCT

7 Bushels at 30 s.	-	-	-	-	£.	s.	d.
Expences,	-	-	-	-	1	6	3
Profit,	-	-	-	-	0	5	10 $\frac{1}{4}$
					1	0	4 $\frac{1}{4}$
					£.	s.	d.
Ploughing,	-	-	-	-	0	1	2 $\frac{1}{2}$
Harrowing,	-	-	-	-	0	0	2 $\frac{1}{4}$
Manuring,	-	-	-	-	0	2	6
Carting in harvest,	-	-	-	-	0	0	1 $\frac{1}{2}$
					0	4	0 $\frac{1}{4}$
Clear profit, 3 l. 5 s. 4 d. per acre,	-	-	-	-	0	16	4

OBSERVATIONS.

This is a very advantageous crop, and gained without a large expence: the manuring was such as the farmers commonly apply to their crops; but the land was not clean, and it had last year yielded a crop of barley, which are both adverse circumstances. The hand-hoeing was of excellent utility; for when pease are sown thick, if the weeds damage them, it must be by gaining the start while the pease are young, for when they join and unite their tendrils, they overpower every thing. The hoes were three-inch ones, and the operation was performed when the pease were about four inches high and stood perfectly erect: they joined and covered the earth soon after, to the destruction of most of the remaining weeds. I have made some trials to ascertain the utility of this practice, which shall be inserted in the proper place.

GENERAL OBSERVATIONS.

These experiments on pease in the common husbandry, are in some respects worthy of attention: they prove how vastly superior spirited husbandry is to the common practice: some of the crops are poor, and even losing ones; others rich and very profitable: this division has nothing respecting seasons: it is totally formed by good and bad husbandry, which I think is decisive in proving that the general notion of the uncertainty of a pea crop is pretty much ideal, and founded on the practice of slovens. But the following tables will shew the state of the culture. I shall give the expences, product, and profit and loss per acre of the preceding trials in one view.

EXPENCES.

Experiment N°	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Average
	-	-	-	-	-	-	-	-	-	-	4 l. 7 s. 10 $\frac{1}{4}$ d.
	3	1	2	1	4	20	2	2	1	1	43
	7	18	3	18	14	11	14	13	19	19	19
	2 $\frac{1}{2}$	0 $\frac{3}{4}$	1 $\frac{1}{2}$	1 $\frac{1}{4}$	1 $\frac{1}{2}$	0	1	4	6	8	10 $\frac{1}{4}$

PRODUCT.

Experiment N°	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	Average
	-	-	-	-	-	-	-	-	-	-	3 quarters. 6 bushels.
	3	2	2	0	5	8	6	4	1	3	37
	4	3	0	0	6	1	2	4	5	4	5
	0	0	0	0	0	0	0	0	0	0	0

PROFIT and LOSS.

Experiment N°	1.	2.	3.	5.	7.	8.	10.	Average
Profit,	-	-	-	-	-	-	-	21
	2	1	1	3	6	3	3	21
	4	13	0	6	13	12	5	16
	9 $\frac{1}{2}$	2 $\frac{1}{4}$	10 $\frac{1}{2}$	0 $\frac{1}{2}$	3	8	4	1 $\frac{1}{4}$

	£.	s.	d.	21	16	14
N ^o 4. Loss,	1	9	9			
6.	8	11	0			
9.	0	0	1			
				10	0	10
Total of clear profit,				11	15	3 $\frac{3}{4}$
Average per acre,	1	3	6 $\frac{1}{4}$			

From these tables it appears that the average expence of 2 l. 17 s. *per* acre, will in such cultivation as these trials, yield a product of three quarters six bushels; including some articles richly manured, and consequently attended with the after advantages of leaving the land in great heart. I think the profit is considerable, and well worth the attention of those farmers who cultivate pease in the common manner.

PRICES of the PRODUCT.

	£.	s.	d.
1764.	1	12	0
1765.	1	11	0
1766.	1	9	0
1767.	1	7	6
Average 1 l. 9 s. 10 d.			

It appears from this average, that the expence of culture is equal to two quarters seven bushels and two pecks of pease at this mean price.

	Q.	B.	P.
Average produce,	3	6	0
Ditto sowing crop,	2	7	2
Average profit,	0	6	2

But to have a clear idea of the result of these trials we must divide them into the common and the perfect husbandry, that we may discover how far each claims a merit of being profitable: I shall divide them into common husbandry, improved ditto, and perfection of tillage and manure.

COMMON CROPS.

EXPENCES.

							£.	s.	d.
Experiment N° 2.	-	-	-	-	-	-	1	18	0 $\frac{1}{4}$
3.	-	-	-	-	-	-	2	3	1 $\frac{1}{2}$
4.	-	-	-	-	-	-	1	18	1 $\frac{1}{4}$
9.	-	-	-	-	-	-	1	19	6
Average 1 l. 19 s. 8 $\frac{1}{4}$ d.	-	-	-	-	-	-	7	18	9 $\frac{1}{2}$

PRODUCT.

							£.	s.	d.
Experiment N° 2.	-	-	-	-	-	-	2	3	0
3.	-	-	-	-	-	-	2	0	0
4.	-	-	-	-	-	-	0	0	0
9.	-	-	-	-	-	-	1	5	0
Average 1 quarter 4 bushels.	-	-	-	-	-	-	6	0	0

PROFIT and LOSS.

							£.	s.	d.
Experiment N° 2. Profit,	-	-	-	-	-	-	1	13	2 $\frac{1}{4}$
3.	-	-	-	-	-	-	1	0	10 $\frac{1}{2}$
							2	14	0 $\frac{1}{4}$
N° 4. Loss,	-	-	-	-	-	-	1	9	9
9. Ditto,	-	-	-	-	-	-	0	0	1
							1	9	10
Clear profit,	-	-	-	-	-	-	1	4	2 $\frac{3}{4}$
Average,	-	-	-	-	-	-	0	6	0 $\frac{1}{2}$

The IMPROVED.

EXPENCES.

							£.	s.	d.
Experiment N° 1.	-	-	-	-	-	-	3	7	2 $\frac{1}{4}$
5.	-	-	-	-	-	-	4	14	11 $\frac{1}{2}$
7.	-	-	-	-	-	-	2	14	1

N°

						£.	s.	d.
N° 8.	-	-	-	-	-	2	13	4
10.	-	-	-	-	-	1	19	8
						<hr/>		
						15	9	3
Average,	-	-	-	-	3 1 10			

PRODUCT.

						Q.	B.	P.
Experiment N° 1.	-	-	-	-	-	3	4	0
5.	-	-	-	-	-	5	6	0
7.	-	-	-	-	-	6	2	0
8.	-	-	-	-	-	4	4	0
10.	-	-	-	-	-	3	4	0
						<hr/>		
						23	4	0

Average, 4 quarters 5 bushels 2 pecks.

PROFIT AND LOSS.

						£.	s.	d.
Experiment N° 1. Profit,	-	-	-	-	-	2	4	9 ¹ / ₂
5.	-	-	-	-	-	3	6	0 ¹ / ₂
7.	-	-	-	-	-	6	13	3
8.	-	-	-	-	-	3	12	8
10.	-	-	-	-	-	3	5	4
						<hr/>		
						19	2	1

Average, - - - - - 3 16 5

The PERFECT.

EXPENCES.

						£.	s.	d.
Experiment N° 6.	-	-	-	-	-	20	11	0

PRODUCT.

						Q.	B.	P.
Experiment N° 6.	-	-	-	-	-	8	1	0

Loss.

	Loss.		£.	s.	d.
Experiment N ^o 6.	-	-	8	11	0
Profit by the improved culture,	-	-	3	16	5
Ditto by the common,	-	-	0	6	0 $\frac{1}{2}$
Superiority of the former,	-	-	3	10	4 $\frac{1}{2}$

This is in the proportion of ONE improved acre being equal to more than TWELVE common ones.

As to the exertion of perfect husbandry in both tillage and manure, we find that pease will not repay so great an expence, notwithstanding that the crop is the greatest here minuted: and this I have already remarked to be owing to the crop of straw being too weighty to keep itself from the ground; by which means the lower parts of all the stalks and branches have not air enough to produce pods, and ripen the corn.

The best culture for this pulse is evidently that which does not, at a great expence, force so vast a luxuriance of growth: such as the introduction in a course after other crops that have been amply manured, which have taken off the first fire of the dung; or else, in common husbandry, either on land in good heart or fallowed for, or upon a common manuring. This is the husbandry which I have in the preceding table called *the improved culture*, and which is twelve times over more beneficial than the common management.

It should be farther observed, that of these four years, not one has been reckoned a good pea season; the common crops have not, in any one of these years, been good. This is a point of much importance; for the improved ones all being profitable, and to an high pitch, shews, in the clearest manner, that the supposed uncertainty of this crop is owing to the common farmers trusting their pease to that slovenly culture so general among them.

The improved culture being *twelve times* more profitable than the common, is a difference really amazing. This difference is the ballance of the two accounts at the end of the pea year; whereas the superiority extends much farther: before the profit and loss is struck, all expences are paid, whether of tillage, manure, or clearing; but the total advantage cannot come into the account, as it extends to the following crops. Besides, the peas being so profitable, is an absolute proof that the land is but little if at all the worse for them; because their covering the land so close, and killing the weeds, mellows the soil (to use the farmers expression)

pression) that is, opens it, pulverizes it, leaves it in a loose crumbling state, in excellent order for succeeding crops. When I speak of succeeding crops, I do not mean wheat, barley, or oats, though the land would certainly yield one, but an ameliorating crop; and for this striking reason to good husbandmen, that the soil should always be kept *increasing* in fertility: for the difference is amazingly great between land that is declining and that which is improving; though the first is, to a certain period, profitable as well as the other.

These advantages, attending the improved culture, are extremely great; but they are not the only ones. We have already touched upon the seasons, now they are evidently unfavourable only to the badly managed lands. My common crops have been as well conducted as the generality of the farmers in this country; and yet the profit is only 6 s. *per acre*. This is owing, it will be said, to season; for one crop yielded *no* produce, owing to the perpetual rains, which choked it with weeds. But in the same year, on the same soil, crops, more completely managed, turned out very profitable. Thus the improved culture does not only exceed the common, as twelve to one in the ballance of the pea year, leaves the soil in a far superior state for future crops, but likewise sets at defiance the influence of unfavourable seasons.—All advantages of striking character.

The more general benefits attending a substitution of these improvements, in the room of common husbandry, are not less than the particular ones. There is no comparison between ten pounds gained from one acre, and from ten or twenty. The extent of business, in the latter case, is open to an hundred inconveniences, when the profit is not proportioned: a farmer's attention is divided and perplexed to no purpose: the sum of money he must employ is vastly larger: the interest he pays, which is not reckoned in these accounts, no more than some other articles, such as fencing, general farming expences, &c. &c. all these are proportioned to the extent of soil, and consequently run much higher on twenty acres than on one or two.

Upon the whole, I have the greatest reason to assert the vast superiority of these improvements in the culture of pease; and I recommend them to common farmers as well as gentlemen, since they consist merely in common practices spiritedly exerted.

S E C T. II.

CULTURE and PRODUCE in the New Method.

MY thorough want of experience in agriculture, when I began my practice, made me as attentive as possible to every means of information. I consulted gentlemen, farmers, and labourers, and made a great many minutes of what I heard, to apply the particulars as occasions called: I also turned over most of the books written on the subject. My first view was to understand common husbandry: it was the latter source that opened a new world to me. I had not the broad-cast mode alone to master, but drilling also. I made what enquiries I was able concerning the most proper vegetables, and the modes of culture. I was told, that pease were peculiarly adapted to the drill-culture: that drilling pease was even common husbandry in some parts of England, either sown with a drill, or broad-cast, and then hoed into rows by a common turnep-hoe, covering the seed at the same time; to this they added the practice of gardeners, even for crops that are not sticked. As I had formed no previous judgment, I determined to give the drill-culture in this, as well as other articles, a very fair trial. I had, from these assurances, a better expectation of this culture for pease than I had conceived of it, either for barley or oats.

EXPERIMENT N° I.

Culture, expences, and produce of half an acre, field T, 1764.

CULTURE.

CULTURE.

This field was fallowed during the year 1763. It received, by the time of drilling, eight ploughings; the seventh threw it on to five feet ridges, and the eighth arched them up: drilled on the top of each a double row of pease, one foot asunder, using two pecks of seed—the white-boiling pea. This was done the beginning of April. The latter end of May gave the first horse-hoeing, turning a furrow from the rows, leaving a ridge of moulds in the furrows. In about ten days hand-hoed the rows.

The middle of June gave the second horse-hoeing, reversing the last; but I found some difficulty in this operation, by the pease in many places falling into the furrows. Some were unavoidably covered by the plough, and more would have been, had not I set a boy to turn them out of the way where they were much fallen. I designed two more horse-hoeings; but thought it better to confine myself to one more, which was given the end of June, and a hand-weeding at the same time. It is not in the nature of pease, unless supported by sticks, to keep so upright as to admit of the same horse-hoeing as more erect crops. They were hooked the beginning of August. Produce one quarter and half a peck.

EXPENCES.

								£.	s.	d.
Eight ploughings,	-	-	-	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	-	-	-	0	0	1
Drilling,	-	-	-	-	-	-	-	0	0	1½
Seed,	-	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	-	0	0	6
Two horse-hoeings,	-	-	-	-	-	-	-	0	0	8
Hand-hoeing,	-	-	-	-	-	-	-	0	1	4
Weeding,	-	-	-	-	-	-	-	0	0	8
Hooking,	-	-	-	-	-	-	-	0	0	4
Harvesting,	-	-	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	-	-	0	1	2
								0	11	4½
Rent,	-	-	-	-	-	-	-	0	17	0
								1	8	4½

PRODUCE.

				£.	s.	d.
1 Quarter and $\frac{1}{2}$ a peck at 32 s.	-	-	-	1	12	6.
Expences,	-	-	-	1	8	4 $\frac{1}{2}$
Profit,	-	-	-	0	4	1 $\frac{1}{2}$
				£.	s.	d.
Ploughing,	-	-	-	0	6	0.
Harrowing,	-	-	-	0	0	3.
Drilling,	-	-	-	0	0	0 $\frac{3}{4}$
Horse-hoeing,	-	-	-	0	0	5.
Carting in harvest,	-	-	-	0	0	1 $\frac{3}{4}$
				0	6	10 $\frac{1}{2}$
The above profit,	-	-	-	0	4	1 $\frac{1}{2}$
Loss 5 s. 6 d. per acre,	-	-	-	0	2	9.

OBSERVATIONS.

This beginning of my drilled pea-culture gave me great hopes that it might be made to answer very well. My people predicted *no crop*; and were much surprized at harvest to find a very decent one for poor land. The operations of horse and hand-hoeing seemed to have a good effect while the pease were young; but when grown up so as not to support themselves, I found they were not given without damage. The pea is a very tender vegetable, and will not bear the least rough usage while growing: a very slight wound makes a branch presently wither; treading upon a branch, moving it roughly, or breaking it, damages the whole plant; so that the horses and man, in the second horse-hoeing, did mischief of this sort, which I could not, with any attention, quite prevent. If the crop was sticked, it would be a very different case.

EXPERIMENT N^o 2.

Culture, expences, and produce of a rood, field M*, 1764.

CULTURE.

CULTURE.

This piece yielded turneps in 1763, which were drawn for cattle in December: in March it received the first ploughing: another in the beginning of April, which threw it on to five feet ridges. The last week arched them up by a third ploughing, harrowed them fine, and drilled two rows of pease, one foot asunder, on the top of each, using one peck of the white sort. The end of May gave the first horse-hoeing, and in a few days after hand-hoed the rows. Within a fortnight after horse-hoed it again, and hand-hoed and weeded the rows; but the regular growth of the pease prevented any more operations of that sort, although the land was not left in that state of pulverization, which I apprehend is requisite in the new husbandry, when each crop is intended as a preparation for another. They were cut about the middle of August: produce three bushels and one peck.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	0	9
Harrowing,	0	0	0 $\frac{1}{2}$
Drilling,	0	0	0 $\frac{3}{4}$
Seed,	0	1	0
Two horse-hoeings,	0	0	4
Two hand-hoeings,	0	1	4
Weeding,	0	0	6
Hooking,	0	0	2
Harvesting,	0	0	4
Threshing,	0	0	5
	0	4	11 $\frac{1}{4}$
Rent, &c.	0	4	3
	0	9	2 $\frac{1}{4}$

PRODUCE.

3 Bushels and 1 peck at 32 s.	0	13	0
Expences,	0	9	2 $\frac{1}{4}$
Profit,	0	3	9 $\frac{3}{4}$

Ploughing

	£.	s.	d.	
Ploughing,	0	1	1½	
Harrowing,	0	0	1½	
Drilling,	0	0	0½	
Horse-hoeing,	0	0	2½	
Carting in harvest,	0	0	0¾	
			<hr/>	0 1 6¼
Clear profit 9 s. per acre,				<hr/> 0 2 3 <hr/>

OBSERVATIONS.

This crop is more profitable than I expected, and much surprized my men: I cannot but entertain hopes that this culture may be rendered profitable by improvements: the evil appears chiefly to lie in the want of the branches supporting themselves, which prevents the necessary horse-hoeings, and occasions the land not to be left in that order I should chuse for a succeeding Michaelmas crop. How far this is consistent with the practice of the gentlemen who have wrote on the new husbandry, I know not, but I am clear it coincides with their writings.

EXPERIMENT N° 3.

Culture, expenses, and produce of one acre 1765, field T.

CULTURE.

The 8th of November 1764, the barley stubble was ploughed on to ridges for the winter. April 29th I gave it the first spring ploughing. May the 3d harrowed it. The 14th ploughed, harrowed and rolled it, and in the ploughing, sowed by hand such furrows while open, as threw the whole into double rows eighteen inches from each other, with three feet intervals. It was with some difficulty I kept the seedsman from committing great mistakes; and as it was, he now and then mistook a furrow or two, which made the intervals in some places about four feet broad, but this was attended with no bad consequences. June the 13th I gave the intervals the first hoeing with a cultivator. I was particularly attentive to the effect of the horse-hoeings; and it was with great pleasure I observed three days after, the fine verdure the pease had attained, evidently from this operation, as appeared from a small piece close adjoining, sown broad-cast, for though a fine shower fell the 14th, yet the good effect of it was infinitely more apparent in the drilled pease.

The

The 22d of June I gave the intervals a second stirring and at the same time hand-weeded the rows. This operation like the former was attended with apparent effects. July the 9th the third and last stirring was given as before. The 22d of August they were hacked. November 3d threshed; and the produce one quarter six bushels.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Two harrowings, and one rolling,	0	1	0
Seed,	0	5	3
Sowing,	0	0	3
Three horse-hoeings,	0	3	0
Weeding,	0	1	0
Cutting,	0	1	2
Harvesting,	0	2	0
Threshing,	0	1	9
	0	19	5
Rent, &c.	0	17	0
	1	16	5

PRODUCE.

1 Quarter 6 bushels at 32 s.	2	16	0
Expences,	1	16	5
Profit,	0	19	7
	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	4½
Rolling,	0	0	0½
Horse-hoeing,	0	3	0
Carting in harvest,	0	0	6½
	0	6	11½
Clear profit,	0	12	7½

	£.	s.	d.
Seed, - - - - -	0	2	3
Two horse-hoeings, - - - - -	0	1	2 $\frac{1}{4}$
Two hand-hoeings, - - - - -	0	3	0
Weeding, - - - - -	0	1	0
Cutting, - - - - -	0	9	0
Harvesting, - - - - -	0	1	3
Threshing, - - - - -	0	1	3
	<hr/>		
	1	0	9 $\frac{1}{4}$
Rent, &c. - - - - -	0	8	6
	<hr/>		
	1	9	3 $\frac{1}{4}$
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P R O D U C E.

1 Quarter 1 bushel at 32 s. - - - - -	1	16	0
Expences, - - - - -	1	9	3 $\frac{1}{4}$
	<hr/>		
Profit, - - - - -	0	6	8 $\frac{1}{4}$
Ploughing, - - - - -	0	1	6
Harrowing, - - - - -	0	0	3 $\frac{1}{2}$
Drilling, - - - - -	0	0	1 $\frac{1}{2}$
Horse-hoeing, - - - - -	0	1	0
Carting in harvest, - - - - -	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	3	2 $\frac{1}{4}$
	<hr/>		
Clear profit 7 s. per acre - - - - -	0	3	6
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O B S E R V A T I O N S.

I have not been able hitherto to carry the product of drilled pease to any advantageous height: this crop bid fair from its appearance to yield a greater produce than it turned out. It is somewhat irksome that one cannot carry a mode of culture to good advantage after we have brought it to be profitable. I had some hope that the increasing the rows to three would have been attended with an increasing advantage. However, future trials under many variations, will discover to what degree of perfection we can carry the practice of drilled pease.

E X P E R I M E N T N^o 5.

Culture, expences, and produce of ten perches, field L*, 1765.

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CULTURE.

CULTURE.

This piece received the first tillage in autumn 1763, when one load of rotten farm-yard dung was turned in. In March the second stirring was given. In April the third: and the first week in May a load of compost, consisting of equal parts of coal ashes, hog dung, and turf, well mixed, was spread on it, and ploughed in directly. In June the fifth earth was given. It was stirred twice more in July. In August it received the eighth ploughing. In September the 9th, and the next month was ridged up. I was not able to stir it again before the end of March, when it was ploughed on to five feet ridges: arched them up by the twelfth and last earth, and after three harrowings drilled them each with three rows of white pease, one foot asunder, taking half a peck of seed. The 25th of April hand-hoed the rows quite clean: and gave the first horse-hoeing the 18th of May, turning a furrow from the plants. The second horse-hoeing was given the 31st, and the 10th of June hand-hoed the rows, weeding them at the same time. I could not give them more horse-hoeings from the falling of the branches, which were very luxuriant; indeed the last horse-hoeing damaged the crop a little, by breaking and treading upon the stalks. Cut them the second week in August: produce one bushel three pecks and an half.

PROPORTIONS *per* ACRE.

EXPENCES.

							£.	s.	d.
Twelve ploughings,	-	-	-	-	-	-	0	12	0
Harrowing,	-	-	-	-	-	-	0	0	4
Water-furrowing,	-	-	-	-	-	-	0	1	0
Drilling,	-	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	-	0	6	0
Hand-hoeing,	-	-	-	-	-	-	0	4	6
Weeding,	-	-	-	-	-	-	0	2	6
Two horse-hoeings,	-	-	-	-	-	-	0	1	4
Cutting,	-	-	-	-	-	-	0	1	9
Harvesting, &c.	-	-	-	-	-	-	0	1	9
Threshing,	-	-	-	-	-	-	0	3	9
First manuring,	-	-	-	-	-	-	0	5	6
Second ditto,	-	-	-	-	-	-	0	18	6
							<hr/>		
							2	19	2
Rent, &c.	-	-	-	-	-	-	1	14	0
							<hr/>		
							4	13	2
							PRO-		

PRODUCE.

	£.	s.	d.
3 Quarters 6 bushels at 32 s.	6	0	0
Expences,	4	13	2
Profit,	1	6	10
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	£.	s.	d.
Ploughing,	0	12	0
Harrowing,	0	0	4 $\frac{1}{4}$
Drilling,	0	0	3
Manuring,	1	6	2 $\frac{1}{2}$
Horse-hoeing,	0	2	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
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The above profit,	2	1	4 $\frac{3}{4}$
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Loss	0	14	6 $\frac{1}{4}$
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OBSERVATIONS.

This crop of pease was nearer paying these high expences than I expected: nor had I from preceding experience any idea that I should ever have a crop in the horse-hoeing way worth six pounds an acre: not one of my people expected half the quantity that this piece gave; though the stalks that had received no damage in the horse and hand-hoeing, were very finely kidded. But good as the crop was, yet the soil was not left so fine and free from weeds, as it ought in the new husbandry; and as it generally is when the full complement of tillage is given to the crop when growing. I have not yet had a crop of drilled pease clean enough to be succeeded by wheat, tho' I have had several broadcast ones that have been so. The reason of the difference is, the broad-cast crops when fine, spreading so thick and close over the ground as to kill the weeds, and mellow the soil from their shade; whereas the drilled ones with intervals are too thin to cause such an effect: the crops proceeding from the latter, are owing to the stalks being thoroughly kidded; but the shade is trifling, and weeds strike through the branches in every part.

EXPERIMENT N^o 6.

Culture, expences, and produce of half a rood, field R, 1765.

CULTURE.

This piece yielded turneps in 1764, which were drawn for cattle in January. In March it was ploughed up; stirred twice more in April, leaving it upon the flat. The 3d of May harrowed it fine and drilled it with white pease, in equally distant rows, one foot asunder; using a peck of seed. The beginning of June hand-hoed them thoroughly with eight-inch hoes, the men stooping down to pluck out the weeds that grew among the pease. They thrive very much after this operation; inso-much that it was visible to all my people. In a fortnight I repeated it with six-inch hoes, plucking the weeds out of the rows, as before, but the weather was so dry, that their number was but trifling. After this I gave them a slight hand-weeding. They joined with much vigour after these operations, and covered all the land very thickly. In these operations I ordered the men to be very attentive to the not trampling upon the stalks, or breaking them; nor to attempt the hoeing under them, where they were much joined. The crop had a fine appearance through the season; was hooked the beginning of August: produce four bushels.

PROPORTIONS *per* ACRE.

EXPENCES.

							£.	s.	d.
Three ploughings,	-	-	-	-	-	-	0	3	0
Ditto harrowings,	-	-	-	-	-	-	0	0	4
Water-furrowing,	-	-	-	-	-	-	0	0	3
Drilling,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	6	0
Hand-hoeing,	-	-	-	-	-	-	0	12	6
Weeding,	-	-	-	-	-	-	0	2	0
Hooking,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	3	0
Threshing,	-	-	-	-	-	-	0	4	0
							1	14	1
Rent, &c.	-	-	-	-	-	-	0	17	0
							2	11	1

PRO-

PRODUCE.

						£.	s.	d.
4 Quarters at 32 s.	-	-	-	-	-	6	8	0
Expences,	-	-	-	-	-	2	11	1
Profit,	-	-	-	-	-	3	16	11
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	0	0	6 $\frac{3}{4}$
Drilling,	-	-	-	-	-	0	0	5
Carting in harvest,	-	-	-	-	-	0	0	6 $\frac{1}{2}$
						0	4	6 $\frac{1}{4}$
Clear profit,	-	-	-	-	-	3	11	4 $\frac{3}{4}$

OBSERVATIONS.

This mode of drilling is evidently very profitable, and bids fair for gaining a prodigious superiority over horse-hoed crops: such conclusions it is true should not be too hastily adopted; successive experiments must confirm the result; nor shall I fail to make them in future years under greater variations. From the appearance of the crop while growing, I have much hope that the practice may be extended to the culture in large with very considerable profit. By means of giving the crop a thorough hand-hoeing while young, that is before the rows join their tendrils, the weeds are pretty well destroyed, they make no formidable appearance afterwards. This operation of hand-hoeing is much easier, safer, and better performed between the rows, than it can be in a broadcast crop however thinly sown. The pease looked as green and as flourishing throughout the season as any of my horse-hoed crops.

EXPERIMENT N^o 7.

Culture, expences, and produce of thirty perches in three divisions, field R, 1765.

CULTURE.

This piece yielded horse-hoed turneps in 1764 which were drawn for cattle in December. Early in the spring the ridges were ploughed down, and new formed: In April arched up, harrowed, and drilled with white pease, in the following methods:

N^o 1.

- N^o 1. Five feet ridges, with 2 rows, 1 foot asunder.
 2. Five feet ridges, with 3 rows, 1 foot asunder.
 3. Five feet ridges, with 4 rows, 8 inches asunder.

Used three quarts of seed for each; which is at the rate of a bushel and half *per* acre. Hand-hoed the rows the 24th of May, and horse-hoed them the 30th. June 10th hand-hoed them again, weeding them at the same time. The 14th gave the second horse-hoeing. Cut them the beginning of August. The produce as follows:

- N^o 1. Two pecks.
 2. Two pecks and $\frac{1}{2}$.
 3. Three pecks and $\frac{1}{2}$.

ACCOUNT of N^o 1. proportioned *per* ACRE.

EXPENCES.

								£.	s.	d.
Three ploughings,	-	-	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	-	0	0	3 $\frac{1}{2}$
Seed,	-	-	-	-	-	-	-	0	4	6
Hand-hoeing,	-	-	-	-	-	-	-	0	4	9
Horse hoeing,	-	-	-	-	-	-	-	0	1	4
Cutting,	-	-	-	-	-	-	-	0	1	6
Harvesting,	-	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	-	0	1	0
								0	17	8 $\frac{1}{2}$
Rent, &c.	-	-	-	-	-	-	-	0	17	0
								1	14	8 $\frac{1}{2}$

PRODUCE.

1 quarter,	-	-	-	-	-	-	-	1	12	0
Loss,	-	-	-	-	-	-	-	0	2	8 $\frac{1}{2}$

Ploughing,

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	4½
Drilling,	0	0	3
Horse-hoeing,	0	2	0
Carting in harvest,	0	0	6½
	<hr/>		
	0	6	2
Total loss,	0	8	10½

ACCOUNT of N° 2.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Drilling,	0	0	3½
Seed,	0	4	6
Hand-hoeing,	0	6	6
Horse-hoeing,	0	1	4
Cutting,	0	1	10
Harvesting,	0	1	0
Threshing,	0	1	3
	<hr/>		
Rent, &c.	1	0	0½
	0	17	0
	<hr/>		
	1	17	0½

PRODUCE.

1 quarter 2 bushels at 32 s.	1	18	0
Expences,	1	17	0½
	<hr/>		
Profit,	0	0	11½

Ploughing,

	£.	s.	d.
Ploughing,	0	3	0
Harrowing,	0	0	4½
Drilling,	0	0	3
Horse-hoeing,	0	2	0
Carting in harvest,	0	0	6½
			<u>0 6 2</u>

The above profit, - - - - - 0 0 11½

Loss, - - - - - 0 5 2½

ACCOUNT of N° 3.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Drilling,	0	0	7
Seed,	0	4	6
Hand hoeing,	0	10	0
Horse-hoeing,	0	1	4
Cutting,	0	2	0
Harvesting,	0	1	3
Threshing,	0	1	9
			<u>1 4 9</u>

Rent, - - - - - 0 17 0
2 1 9

PRODUCE.

14 Bushels at 32 s.	2	16	0
Expences,	2	1	9
			<u>0 14 3</u>

Profit, - - - - - 0 14 3

Ploughing,

Ploughing,	3	0	0
Harrowing,	4	0	0
Drilling,	3	0	0
Horse-hoeing,	2	0	0
Carting in harvest,	6	0	0
	<hr/>		
Clear profit,	0	8	1
Profit by the four rows,	0	8	1
Loss by the three,	0	5	2½
Superiority of the former,	0	13	3½
Profit by four,	0	8	1
Loss by double,	0	8	10½
Former superior by	0	16	11½
Loss by double,	0	8	11½
Ditto by treble,	0	5	2½
Latter superior by	0	3	9

OBSERVATIONS.

The result of this trial surprized me a good deal. I fully expected that the advantage would be remarkably great in favour of the quadruple rows, and the treble over the double. The scale is thus; but not near in that degree I expected: however, the difference is enough to prove that a man should be cautious in his drilling of pease, to depend on many rather than a few rows; and in the variations of many crops, probably the superiority would be yet greater. But this we shall know better by succeeding experiments.

OBSERVATIONS on the Drilled Crops of 1764 and 1765.

The practice of drilling pease has not, upon the whole, proved advantageous in these years; but the equally distant rows promise very fair for being highly beneficial. It is true there is but one trial, but the profit of it is considerable, far more than has been gained in general in the common method.

The horse-hoeing culture has not been so unsuccessful as I have found it upon several other vegetables; but the loss is predominate, and the profit on none of the trials is considerable. This result I attribute to several causes: the horse-hoeings are, from the nature of the vegetable, obliged to be reduced to two; whereas I think four are, upon an average, absolutely necessary to crops with intervals: but if the pease flourish at all, they will fall so much into the intervals, that more hoeings would ruin the crop, unless they were so much crowded in time, that the benefit would be comparatively small. I have, in all these horse-hoed crops, found that operation very critical: the first is given while the plants are so young that they are in constant danger of being buried by the moulds that fall through the throat of the plough: after this they fall on either side, according to the wind; when they lie in the furrow made by the first hoeing, they must be raised before the second. I have not, these years, been so attentive to this part of the work as I ought, from a tenderness of running up the expences; but I purpose, in my future trials, to bestow this expence, in hopes of being repaid in the crop: a boy must attend each plough that horse-hoes. This may be a remedy in part, perhaps wholly; but if it is extended to gaining an opportunity for more horse-hoeings than two, I fear the moving the pease at that age will do some damage to the crop: however, this point shall be tried.

The practice of drilling in general requires so many operations to the crop while growing, that a vegetable, which has not strength to support itself, must unavoidably be damaged by them. If a cultivator is attentive enough to remark the hand-hoeing a field of pease, whether broad-cast or drilled, he will observe, that treading on a loose stalk hurts it considerably, and that a very slight wound from a hoe is almost death to the plant. This tenderness in a trailing vegetable is a great objection to multiplying that culture, which is given while the crop is growing.

Neither of these years has been remarkable for good pea crops: a circumstance which should not be forgotten in the register. My drilled pieces, in the drought of 1765, carried a deeper green than any of the broad-cast ones; but I should remark, that taking all these experiments one with another, I find that a good crop of broad-cast pease leaves the ground in as good a situation for future crops as the best of drilled ones; but in this comparison, the equally distant rows enjoy all the advantage of the common husbandry. Indeed a broad-cast crop is far worse in this respect than a bad drilled one: for not yielding the same opportunities of being cleaned, the weeds get much more a-head.

EXPERIMENT

EXPERIMENT N^o 8.

Culture, expences, and produce of eleven acres, field D*, 1766.

CULTURE.

In 1761 this field yielded barley. In 1762 clover. In 1763 wheat. In 1764 clover. In 1765 wheat. From which course it appears, that the land had by no means been favoured.

The wheat-stubble ploughed up the end of October. The 16th &c. of April stirred it a second time. The 19th harrowed it. May 1st ploughed it. The 2d harrowed it; and a pair of horses with a plough drew furrows for the drill plough-horse to walk in. Begun with three rows, one foot asunder, with intervals of four feet, sowed in this manner; three acres with four bushels and two pecks;—should have done more, but the plough broke. The next day went on with it for four hours, until it broke again, sowing two rows, one foot asunder, with four feet intervals. The 5th continued the work (eight hours for a day) in the same manner, and finished it; sowing in all one quarter five bushels seed. The drill plough-horse was led by a boy, and a man with it, to lift it at the head-land: it required the plough to be constantly drawing furrows. Very heavy rains succeeded; but did not water-furrow the field at all, on account of the horse-hoeing. June 17th and 18th horse-hoed them for the first time, opening a furrow on each side the rows, thereby throwing up a ridge in the middle of each interval; I was much pleased to find by this operation that the soil was loose and in such a state as I wished it; and I cannot but observe, that the strait and regular appearance of the rows was very beautiful, and exhibited a view of husband-like neatness and attention, not to be found in the best cultivated fields under the common management. The 19th, &c. hand-hoed the rows and plucked out the weeds that grew among the pease. The 25th, &c. horse-hoed them a second time, splitting the ridge that was before thrown up in the middle of the intervals. July 12th hand-weeded them a second time. The 26th horse-hoed them a third time. August 2d the fourth time, banking them up. I should observe that when the last hand-weeding was given, they required hoeing between the rows, which I tried, but found the pease too much entangled to permit the weeding, altho' performed as well as the circumstance would permit, yet was by no means effectual, insomuch that on the conclusion of the last horse-hoeing, when the culture was finished, multitudes of weeds appeared among the pease, which could by no means be extracted without destroying the crop; as

it is well known how tender a vegetable the pea is; and that it withers on receiving the least pressure or wound. No difference of management could have prevented the evil, except so complete a preceding fallow, as to have *totally* eradicated all roots and seeds of weeds. Sept. 9th cut them. Carried them the 18th. Product three quarters six bushels in the whole: one quarter seven bushels from the three acres, and the same quantity from the remaining eight acres. The crop on the first is five bushels *per acre*; on the latter not quite two.

EXPENCES.

	£.	s.	d.
Three ploughings,	1	13	0
Two harrowings,	0	4	6
Drilling,	0	3	2½
Seed,	1	17	6
Four horse-hoeings,	1	9	8
One hand-hoeing,	1	9	8½
Two weedings at 3 s.	1	13	0
Cutting,	0	12	10
Harvesting,	0	12	9
Threshing,	0	5	6
	10	1	8
Rent, &c.	9	7	0
	19	8	8

PRODUCE.

3 Quarters 6 bushels at 26 s.	4	17	6
Loss 1 l. 6 s. 5 d. <i>per acre</i> ,	14	11	3
	£.	s.	d.
Ploughing,	3	19	0½
Harrowing,	0	8	3
Horse-hoeing,	2	8	0
Drilling,	0	2	9
Carting in harvest,	0	5	11½
	7	4	0½
Total loss 1 l. 19 s. 6½ d. <i>per acre</i> ,	21	15	2½

OBSERVATIONS.

The reader may imagine from the preceding crops which this field had yielded, that I designed the drilled pease rather as a fallow than another crop; and that I hoped to clear it as effectually by means of horse-hoeing, hand-hoeing, and weeding, as by ploughing, at the same time that I gained something towards the expences; but the event proved very contrary to my expectations; for a crop of broad-cast pease would beyond all doubt, have cleared the land much better, had they succeeded, and proved far more profitable. I therefore rather mean this experiment as a trial of drilled pease for a *fallow crop*, than of the merit of the drill husbandry; and apprehend it decisive in the first case, though very dubious in the latter. There is no slight reason to conclude that to gain a profitable crop of pease by drilling, the land must be well fallowed, as they will not give a tolerable opportunity for eradicating weeds while they are growing. The superiority of the product of the acres sown with three rows is very considerable, and proves in a striking manner (as every article of preparation, hoeing, weeding, season, &c. were the same to both) that the ground in horse-hoed crops of pease is not sufficiently covered with the plants: or in other words, that the benefits resulting from the horse-hoeing, by no means answer the loss of ground occasioned by it. I have no doubt in my own mind but the crop would in such experiments, be in proportion to the number of rows, until they joined to the exclusion of the horse-hoe. But this is a point which deserves further trial, and it shall have it.

EXPERIMENT N^o 9.

Culture, expences, and produce of one acre, field G*, 1766.

CULTURE.

The stubble of the preceding crop was ploughed up in December, on to the ridge. In March it was stirred again, throwing it on to five feet ridges. Arched them up by a third earth the middle of April, and harrowing the ridges thrice, drilled them with treble-rows of white boiling pease, one foot asunder, using two bushels of seed. Hand-hoed them as soon as six inches high, making the fellows stoop down to pick out the weeds that grew among the plants. Gave the first horse-hoeing the first week in June. Hand-hoed them again in a few days afterwards. Gave the second horse-hoeing the middle of the same month, a boy preceding

preceding the plough, with a light rake to turn over the pease to make them grow perpendicularly over the rows. In a few days after this horse-hoeing, the rows were hand-weeded; I should observe, that I purposed hand-hoeing them, but the turning the pease inwards, covered the spaces so much, that the hoes could not work without doing too much damage to the crop. The first week in July gave a third horse-hoeing; the boy attending as before. Had a fourth horse-hoeing been expedient, this third should have turned the earth *from* the plants; but as I found it must be the last, I repeated the last method, that of raising fresh moulds towards the rows, banking them up again. The crop was hooked the middle of August. Produce two quarters two pecks.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	4
Water-furrowing,	0	0	9
Drilling,	0	0	3½
Seed,	0	8	0
Three horse-hoings,	0	2	0
Hand-hoeing,	0	7	6
Weeding,	0	2	0
Turning over the pease twice,	0	0	4
Cutting,	0	2	0
Harvesting,	0	2	3
Threshing,	0	2	9

Rent,

1 11 2½
0 17 0

2 8 2½

PRODUCE.

2 Quarters 2

s. at 28 s.

2 17 9

Expences,

2 8 2½

Profit,

0 9 6½

Ploughing,

Ploughing,	7	2	1
Harrowing,	1	1	1
Drilling,	3	3	3
Horse-hoeing,	3	3	3
Carting in harvest,	6	6	6
The above profit,	12	12	12
Loss,	9	9	9
	2	2	2

OBSERVATIONS.

This crop from its appearance gave me greater hope than the product answered: the operation of turning aside the pease, procured a horse-hoeing extraordinary; and the boy did not damage the plants to any degree of consequence. The rows were kept very clean from weeds, notwithstanding the extreme wetness of the season. But the loss on the account shews that these circumstances were not powerful enough to render the culture beneficial. Whether it is to be attributed to the season alone I shall know when I have threshed my broadcast experiments, but their appearance does not denote such a cause.

EXPERIMENT N^o 10.

Culture, expences, and produce of a rood, field L*, 1766.

CULTURE.

This rood yielded horse-hoed potatoes in 1765 in the perfection of tillage and manure, the ridges five feet broad. Two ploughings the beginning of March, reversed and arched them up. The 14th drilled each ridge with three rows of white pease, one foot asunder, using two pecks of seed. Prevented by the rains from hand-hoeing them until the 17th of May; and then horse-hoed them for the first time. Horse-hoed it again the 5th of June. The 9th hand-weeded them. The 12th horse-hoed again, a boy turning the pease out of the way. The 16th another hand-weeding was given, and a fourth horse-hoeing; the pease being turned as before. It was with difficulty that the weeds were kept under, even with all these repeated operations; the wetness of the season brought them up by thousands; and yet I thought this land was perfectly clear of them: cut them the last week in August. The produce five bushels.

Pro-

PROPORTIONS *per* ACRE.

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	2	0
Harrowing, - - - - -	0	0	4
Drilling, - - - - -	0	0	3½
Seed, - - - - -	0	8	0
Water-furrowing, - - - - -	0	0	6
Four horse-hoeings, - - - - -	0	2	8
One hand-hoeing, - - - - -	0	4	6
Weeding, - - - - -	0	3	6
Cutting, - - - - -	0	2	3
Harvelting, - - - - -	0	2	3
Threshing, - - - - -	0	3	4
	<hr/>		
	1	9	7½
Rent, &c. - - - - -	0	17	0
	<hr/>		
	2	6	7½
	<hr/>		

PRODUCE.

2 Quarters 4 bushels at 27 s. - - - - -	3	7	6
Expences, - - - - -	2	6	7½
	<hr/>		
Profit, - - - - -	1	0	10½

	£.	s.	d.
Ploughing, - - - - -	0	4	9½
Harrowing, - - - - -	0	0	9
Drilling, - - - - -	0	0	3
Horse-hoeing, - - - - -	0	4	0
Carting in harvest, - - - - -	0	0	6½
	<hr/>		
	0	10	4
	<hr/>		
Clear profit, - - - - -	0	10	6½
	<hr/>		

OBSERVATIONS.

The richness of the soil in this experiment, rendered it a profitable one; but considering the succeeding crop of potatoes in perfect management, ten shillings an acre profit is a nothing: a broad-cast crop of almost any

any grain or pulse, would beyond a doubt have yielded more than five times this advantage. I am not clear that the fourth horse-hoeing, or even the third, answered the expence and damage to the crop: for the land being in great heart, threw out such a burthen of straw that it was with some difficulty the plough moved without doing much mischief. The season was so wet that the weeds arose hydra-headed, and yet they were kept pretty well under. Whoever determines to keep his crops clear from them on rich lands, in wet seasons, will find it a business of vast expence and endless attention.

EXPERIMENT N° 11.

Culture, expences, and produce of ten perches, field M*, 1766.

CULTURE.

The tillage of this piece began in October 1764; when it was ploughed on to the ridge. In March 1765 gave it the first spring earth; two more in April, when it was harrowed twice, covering three bushels of malt dust; which manure I used that it might force up a crop of weeds; it answered pretty well, for many were turned down by the fifth ploughing the end of May. Another earth and a third harrowing were given in June. Ploughed it again in July. The eighth it received in August. The 9th turned in one load of a compost, consisting of equal parts of coal ashes, hog dung, and rotten horse dung, all brought from Bury. This was in October, when it was thrown on to the ridge again for winter. In March 1766, it had the first spring earth; and two more in April, the first of which formed it into three feet ridges, and the second arched them up: they were then harrowed and drilled with four rows of white pease on each; eight inches asunder; and three bushels of foot sown over it. This operation was performed the 14th. The pease came up and flourished away with an uncommon luxuriance; indeed they grew so quick, that I was forced to hurry the succeeding tillage more than I should otherwise have done; and the wetness of the season, together, united to prevent my giving so many hoeings as the crop would otherwise have had. They were horse-hoed thrice; hand-hoed thrice; and hand-weeded twice. They were hooked the middle of August: product two bushels and one quarter of a peck.

PROPORTIONS *per* ACRE.

EXPENCES.

	£.	s.	d.
Twelve ploughings,	0	12	0
Six harrowings,	0	0	9
Water-furrowing,	0	0	3
Drilling,	0	0	6
Seed,	0	7	0
Labour and cost of first manuring,	1	2	0
Ditto of the second,	2	10	2
Ditto of the third,	1	6	8
Three horse-hoeings,	0	2	0
Turning aside the pease,	0	0	9
Two hand-hoeings,	0	6	3
Two weedings,	0	3	9
Hooking,	0	2	6
Harvesting,	0	2	3
Threshing,	0	5	0
	7	1	10
Rent,	1	14	0
	8	15	10

PRODUCE.

	£.	s.	d.
5 Quarters at 27 s.	6	15	0
Loss,	2	0	10

	£.	s.	d.
Ploughing,	1	8	9
Harrowing,	0	2	3
Carting the first manure,	0	15	2 $\frac{3}{4}$
Ditto the second,	3	0	6
Ditto the third,	0	3	6 $\frac{3}{4}$
Drilling,	0	0	6
Horse-hoeing,	0	3	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
	5	14	4
Total loss,	7	15	2

OBSER-

OBSERVATIONS.

This crop is an exceeding good one in common husbandry, and an extraordinary one for drilling, but the loss is so great that it proves in the strongest manner how little adapted pease are to a return of such great expences, at least in this mode of culture. The operations of horse and hand-hoeing, notwithstanding the turning aside the branches, did some mischief, the luxuriance of the crop was so great; but not more were given than necessary to keep the weeds under.

EXPERIMENT N° 12.

Culture, expences, and produce of half an acre, field L*, 1766.

CULTURE.

The reader is desired to turn to experiment N° 9 of drilled wheat: the piece was this year drilled with hog pease, the small dun sort. In October the ridges (five feet ones) were reversed by two ploughings, leaving them arched up for the winter, and well water-furrowed. The beginning of March reversed and arched them up again by two more ploughings; and the 14th drilled each with three rows of pease, one foot asunder, using a bushel of seed. I was obliged by the extreme wetness of the season to hurry the operations of hoeing; and snatch such times for them as the weather would allow me. They were horse-hoed thrice, hand-hoed twice, and weeded twice. Cut the middle of August: produce one quarter one bushel.

EXPENCES.

							£	s.	d.
Four ploughings,	-	-	-	-	-	-	0	2	0
Harrowing,	-	-	-	-	-	-	0	0	3
Water-furrowing,	-	-	-	-	-	-	0	0	6
Drilling,	-	-	-	-	-	-	0	0	1 ³ / ₄
Seed,	-	-	-	-	-	-	0	3	0
Three-horse-hoeings,	-	-	-	-	-	-	0	2	0
Turning the pease aside,	-	-	-	-	-	-	0	0	4
Two hand-hoeings,	-	-	-	-	-	-	0	2	6
Two weedings,	-	-	-	-	-	-	0	1	0
Cutting,	-	-	-	-	-	-	0	7	0
			L 1 2						Harvesting,

Harvesting,	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	0	1	6
Rent,	-	-	-	-	-	-	0	14	9 $\frac{1}{2}$
							0	8	6
							1	3	3 $\frac{1}{2}$

P R O D U C E.

Quarter 1 bushel at 24 s.	-	-	-	-	-	-	1	7	0
Expences,	-	-	-	-	-	-	1	3	3 $\frac{1}{2}$
Profit,	-	-	-	-	-	-	0	3	8 $\frac{1}{4}$

							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	4	9 $\frac{1}{2}$
Harrowing,	-	-	-	-	-	-	0	0	4 $\frac{1}{2}$
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Horse-hoeing,	-	-	-	-	-	-	0	1	6
Carting in harvest,	-	-	-	-	-	-	0	0	3 $\frac{1}{4}$
The above profit,	-	-	-	-	-	-	0	7	0 $\frac{1}{4}$
Loss,	-	-	-	-	-	-	0	3	8 $\frac{1}{4}$
							0	3	4 $\frac{1}{4}$

O B S E R V A T I O N S.

The loss upon this crop is not great; but it certainly ought to have yielded considerable profit. The wheat succeeded a good fallow; the operation of tillage on it while growing, totally eradicated all weeds in so dry a year as 1765; the pease therefore succeeded to great advantage, and being drilled early, I had great hope of a very beneficial crop: the product is not despicable, but the expences running high required a superior crop. I know not the experience of others in this case, but I have found that with the utmost attention it has been a very difficult and expensive task to keep the land clear of weeds in a wet year, and a task that would on this land be impossible nearly to effect for double the expence, which is stated by several writers on this husbandry. But I apprehend the true spirit of it is thoroughly to clear the soil, and keep it in a perfectly loose and crumbling state: the latter part of the business increases weeds greatly, for the finer the land, the more of them vegetate: a bed of moulds had it none within itself is in such fine order, that the air will at all times feed it.

EXPER-

EXPERIMENT N^o 13.

Culture, expences, and produce of ten perches, field L*, 1766.

CULTURE.

This piece yielded cabbages in 1765 in complete management, both of tillage and manure: they were cut for cattle in December, and the land ploughed twice the first fortnight in March, the weather being remarkably fine. The second of these earths arched the ridges up; five feet ones; they were directly harrowed, and on the 16th drilled each with four rows of white pease, using half a peck. They were horse-hoed thrice; hand-hoed twice; and weeded once, at the dryest times in the following wet season. Hooked in August: produce one bushel and three pecks.

PROPORTIONS *per* ACRE.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Harrowing,	0	0	3
Drilling,	0	0	7
Seed,	0	7	0
Water-furrowing,	0	0	4
Three horse-hoeings,	0	2	0
Turning aside the pease,	0	0	6
Two hand-hoeings,	0	7	9
One weeding,	0	2	3
Cutting,	0	2	0
Harvesting,	0	1	9
Threshing,	0	4	8
	1	10	8
Rent,	0	17	0
	2	7	8

PRODUCE.

3 Quarters 4 bushels at 26 s.	4	11	0
Expences,	2	7	8
Profit,	2	3	4

Ploughing,

	£.	s.	d.
Ploughing,	0	4	9½
Harrowing,	0	0	9
Drilling,	0	0	6
Horse-hoeing,	0	3	0
Carting in harvest,	0	0	6½
	<hr/>		
		0	9 7
Clear profit,	-	-	1 13 9
	<hr/>		

OBSERVATIONS.

This has been a very fine crop, and the profit is not trifling: but I cannot help remarking, that a broad-cast one of almost any sort, succeeding cabbages so well managed, would have paid much better. The horse and hand-hoeing, after the first, damaged this, as they did all the preceding ones. While the pease are young and erect, these operations do no mischief, but apparently much good, but the contrary is the case after they are grown, so as to fall into the partitions. Ever since my first practising this husbandry, I have been convinced that the great utility of it is for vegetables that support themselves erect, from their infancy to perfection.

EXPERIMENT N° 14.

Culture, expences, and produce of ten perches, field M*, 1766.

CULTURE.

This piece yielded carrots in 1765 in common management, which were taken up the end of October, and the land ploughed. The beginning of March gave it two earths more, leaving it quite flat; harrowed it thrice, and drilled it with white boiling pease, in equally distant rows, one foot asunder, using three quarters of a peck of seed. They came up very well: the 25th of April hand-hoed them with six-inch hoes; the men plucking out the weeds with their hands, that grew among the pease. In about ten days repeated the operation; weeding the rows as before. After this they were hand-weeded once. Cut in August: the produce seven pecks.

PRO-

PROPORTIONS *per* ACRE.

EXPENCES.

						£.	s.	d.
Three ploughings,	-	-	-	-	-	0	3	0
Three harrowings,	-	-	-	-	-	0	0	4½
Drilling,	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	0	10	6
Hand-hoeing twice,	-	-	-	-	-	0	11	0
Weeding once,	-	-	-	-	-	0	1	9
Cutting,	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	0	1	9
Threshing,	-	-	-	-	-	0	4	8
						1	16	0½
Rent, &c.	-	-	-	-	-	0	17	0
						2	13	0½

PRODUCE.

3 Quarters 4 bushels at 25 s.	-	-	-	-	-	4	7	6
Expences,	-	-	-	-	-	2	13	0½
Profit,	-	-	-	-	-	1	13	5½

						£.	s.	d.
Ploughing,	-	-	-	-	-	0	7	2½
Harrowing,	-	-	-	-	-	0	1	1½
Drilling,	-	-	-	-	-	0	0	5
Carting in harvest,	-	-	-	-	-	0	0	6½
						0	9	3¼
Clear profit,	-	-	-	-	-	1	4	2¼

OBSERVATIONS.

This is a very good and a profitable crop; I think it is more than I should have received in the common method. Indeed this species of drilling appears to be particularly adapted to pease, for it destroys the weeds when the crop is weakest, and does no damage to the latter when it is strongest, like horse-hoeing: the great excellency of the common method is, the vast power a thick crop has in destroying weeds, by joining so close as to smother every thing under them. Now the hand-hoeing

ing the equally distant rows while very young, kills all the young weeds, which gives the pease the start of them, and joining in a short time, they gain a complete victory. In the common way some large weeds will, for want of being destroyed early, pierce through the crop, and do the land much mischief in scattering their seeds, nor can it be remedied, for the walking in to cut them would destroy a vast number of the pease.

GENERAL OBSERVATIONS on the crops of 1766.

My drilled pease have not upon the whole been such advantageous crops as I expected. The trials of this year have been various, but none of them of such capital benefit as to make the practice of superior character. The equally distant rows for hand-hoeing are much better than any of the other crops. And from the particulars of that culture, I have the greatest reason to believe, will in future as well as at present, prove more beneficial than horse-hoeing: in the immediate profit of the crop there can I think be no doubt; and as to the situation in which the soil is left, I would depend in any critical point, on a large crop broadcast, or in equally distant rows for mellowing and loosening the soil, as soon as a horse-hoed one; for what the latter gains from that operation, it more than loses in the want of shade, which not only pulverizes but also enriches.

It appears that the horse-hoeing culture after crops in complete management, is profitable from the rich state of the soil; but does not yield near the benefit which almost any commonly sown crop would.

The complete management is vastly more extensive than that culture will repay.

The year has been remarkably wet, insomuch that the weeds arose continually, and it was only by means of perpetual culture that they were kept under. This has rendered these crops very expensive; a circumstance not to be forgotten; for if the average of seasons in general prove drier, the expence would not be so high.

I find from the general experience of this season, that four horse-hoeings cannot with any propriety be given: let whatever care be taken in turning the stalks out of the way, yet the damage the crops receive is great; the moving is mischievous and in some crops a tedious, troublesome work. Even three horse-hoeings cannot be given clear of these objections: in my private opinion the vegetable will admit but two; and I am so clear in this that I determine never hereafter to attempt more, unless a crop happens accidentally to support itself clear of the intervals.

EXPERIMENT N^o 15.

Culture, expences, and produce of ten perches, field L*, 1767.

CULTURE.

This piece yielded drilled barley in 1766, on five feet ridges. They were ploughed down in autumn. Gave it the first spring earth in February; the second in March, the weather being fine, threw it on to five feet ridges, arched them up by the fourth ploughing: harrowed it fine; and drilled three rows of white pease on the top of each, using three quarters of a peck of seed. Horse-hoed them twice while young: hand-hoed twice and weeded once. Cut them the middle of August: produce three pecks and an half.

PROPORTIONS *per* ACRE.

EXPENCES.

	£.	s.	d.
Four ploughings,	0	4	0
Harrowing,	0	0	4
Drilling	0	0	3½
Seed,	0	10	6
Two horse-hoeings,	0	1	4
Two hand-hoeings,	0	6	9
One weeding,	0	2	3
Cutting,	0	1	6
Harvesting,	0	1	9
Threshing,	0	2	4
	<hr/>		
Rent, &c.	1	11	0½
	0	17	0
	<hr/>		
	2	8	0½

PRODUCE.

1 Quarter 6 bushels at 26 s.	2	5	6
Loss,	0	2	6½

	£.	s.	d.
Ploughing, -	0	9	9
Harrowing, -	0	0	9
Drilling, -	0	0	3
Horse-hoeing, -	0	2	0
Carting in harvest, -	0	0	6½
	<hr/>		
	0	13	3½
Total loss -	0	15	10
	<hr/>		

OBSERVATIONS.

This trial gives me no great expectation from the crops of 1767. It has been in general a very unfavourable season to most of the productions of the earth; the perpetual rains raised such numbers of weeds, that it was in many fields either impossible to overcome them, or extremely expensive. From a careful attention to this crop, I do not think it suffered for want of more horse-hoeings.

EXPERIMENT N° 16.

Culture, expences, and produce of ten perches, field L*, 1767.

CULTURE.

Yielded horse-hoed turneps in the perfection of tillage and manure in 1766, on five-feet ridges, which were drawn for cattle in February. Reversed the ridges and arched them up by two ploughings, the first and second weeks in March; and harrowing them fine, drilled them each with three rows of white pease, one foot asunder, using three quarters of a peck of seed. Hand-hoed the rows the end of April. The middle of May gave the first horse-hoeing, and in a few days after, hand-hoed them again. The beginning of June horse-hoed them again; and then gave another hand-hoeing, after this they had only a slight hand-weeding. Cut them the beginning of August: produce one bushel and two pecks.

PROPORTIONS *per* ACRE.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Harrowing,	0	0	4
Drilling,	0	0	3½
Seed,	0	11	0
Water-furrowing,	0	0	6
Two horse-hoeings,	0	1	4
Two hand-hoeings,	0	7	0
One weeding,	0	2	0
Cutting,	0	1	9
Harvesting,	0	2	3
Threshing,	0	4	0
	1	12	5½
Rent,	0	17	0
	2	9	5½

PRODUCE.

3 Quarters at 25 s.	3	15	0
Expences,	2	9	5½
Profit,	1	5	6½

	£.	s.	d.
Ploughing,	0	4	10½
Harrowing,	0	0	9
Drilling,	0	0	3
Horse-hoeing,	0	2	0
Carting in harvest,	0	0	6½
	0	8	5
Clear profit,	0	17	1½

OBSERVATIONS.

That this crop is profitable cannot be denied ; but that the land would in the broad-cast husbandry have yielded far more beneficially, whatever might have been the crop, I cannot have the least doubt. From a variety of

of trials I have found when the land is very highly manured, that the second crop is more advantageous than the first: one cannot assert it would have been the case here, but we have the strongest reason to suppose it. This profit of seventeen shillings is therefore, compared to a moderate expectation, a loss. More horse-hoeings could not have been given without damage.

EXPERIMENT N° 17.

Culture, expences, and produce of ten perches, field M*, 1767.

CULTURE.

This piece yielded cabbages in 1766 in complete management respecting both tillage and manure, which were cut for cattle in January. The beginning of March ploughed it twice, and twice more in April, and harrowed it fine, leaving it flat. Drilled it with white pease in equally distant rows, one foot asunder, using three quarters of a peck of seed. They arose very beautifully and with such luxuriance, that I determined to exert myself particularly in keeping them perfectly clean from weeds, while they were young enough to admit the necessary operations without damage. For this purpose they were hand-hoed thrice, and weeded once. Hooked in August: the produce three bushels.

EXPENCES.

	£.	s.	d.
Four ploughings,	-	-	-
Harrowing,	-	-	-
Drilling	-	-	-
Seed,	-	-	-
Three hand-hoeings	-	-	-
One weeding,	-	-	-
Cutting,	-	-	-
Harvesting,	-	-	-
Threshing,	-	-	-
	2	5	1
Rent, &c.	0	17	0
	3	2	1

PRO-

PRODUCE.

	£.	s.	d.
6 Quarters at 28 s.	8	1	0
Expences,	3	2	1
Profit,	5	5	11

	£.	s.	d.
Ploughing,	0	9	9
Harrowing,	0	1	1½
Drilling,	0	0	5
Carting in harvest,	0	0	6½
	0	11	10
Clear profit,	4	14	1

OBSERVATIONS.

This is a noble crop, and much worthy of attention; since it is certainly of importance to know that this method of drilling will in so wet a season produce such a crop: the broad-cast mode of sowing I apprehend would by no means have equalled it. I think this was the finest piece of pease I ever viewed, and considering they were the white sort, which are supposed to delight in dry seasons most; I apprehend it would in a drier season have been more considerable. By means of the hand-hoeing the weeds are so much checked, that when the pease join they have an easy victory over the remainder; and the surface is at the same time so loosened, that the roots strike with acquired vigour, to the great nourishment of the crop.

EXPERIMENT N° 18.

Culture, expences, and produce of ten perches, field M*, 1767.

CULTURE.

This piece yielded potatoes in 1766, which were taken up in October by the plough. In March it was ploughed twice more, the last of which threw it on to five feet ridges, turning in one load of rotten farm-yard dung. The middle of April arched them by a fourth, and harrowing them fine, drilled four rows of white pease on the top of each, using three quarters of a peck of seed. The rows were horse-hoed the succeeding wet season twice, hand-hoed twice, and weeded once. They were cut the beginning of August: produce one bushel and a peck.

EXPENCES.

EXPENCES.

							£.	s.	d.
Four ploughings,	-	-	-	-	-	-	0	4	0
Harrowing,	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	0	0	7
Seed,	-	-	-	-	-	-	0	10	6
Manuring,	-	-	-	-	-	-	0	2	6
Two horse-hoeings,	-	-	-	-	-	-	0	1	4
Two hand-hoeings,	-	-	-	-	-	-	0	7	9
One weeding,	-	-	-	-	-	-	0	2	6
Hooking,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	2	0
Threshing,	-	-	-	-	-	-	0	3	6
							1	17	6
Rent, &c.	-	-	-	-	-	-	0	17	0
							2	14	6

PRODUCE.

2 Quarters 4 bushels at 25 s.	-	-	-	-	-	-	3	2	6
Expences,	-	-	-	-	-	-	2	14	6
Profit,	-	-	-	-	-	-	0	8	6
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	9	9
Harrowing,	-	-	-	-	-	-	0	1	1½
Drilling,	-	-	-	-	-	-	0	0	6
Manuring,	-	-	-	-	-	-	0	5	0
Horse-hoeing,	-	-	-	-	-	-	0	2	0
Carting in harvest,	-	-	-	-	-	-	0	0	6½
								0	18 11
The above profit,	-	-	-	-	-	-	0	8	6
Loss,	-	-	-	-	-	-	0	10	5

OBSERVATIONS.

This crop received a manuring at so small an expence, that I expected it would be very profitable: the contrary event shews me how much expectations are to be regarded in matters of husbandry. The product equalled

equalled if not exceeded most common pea crops in my neighbourhood; but the expences of this culture eat out the profit, and yet I think it succeeds much better with me than either barley or oats.

OBSERVATIONS on the CROPS of 1767.

This year in the extreme wetness of it resembled 1766. The weeds came up, with such an appearance that it was with difficulty one could believe they had done the same only a year before. This rendered so much hand-hoeing and weeding necessary, that expences have run very high, which (however good husbandry such practices may denote) will in all modes of culture bring down the profit: drilled pease have not this year been advantageous enough to repay it, and I must own from this experience I cannot recommend the practice of horse-hoeing this vegetable. Drilled in equally distant rows, for hand-hoeing alone, they thrive incomparably, and much exceed the broadcast mode: this is the method which has proved much the most successful this season.

GENERAL OBSERVATIONS on these EXPERIMENT.

Before I venture any general remarks on these trials, I shall pursue my former course of inserting the particulars of expences, product, and profit and loss, that the averages may be drawn, which in these enquiries carry the most authority.

EXPENCES.

				£.	s.	d.
Expence per acre of Experiment N ^o 1.	-	-	-	3	10	6
2.	-	-	-	2	3	0
3.	-	-	-	2	3	4 $\frac{1}{2}$
4.	-	-	-	3	5	0
5.	-	-	-	6	14	6 $\frac{3}{4}$
6.	-	-	-	2	15	7 $\frac{1}{4}$
7.	(1)	-	-	2	0	10 $\frac{1}{2}$
	(2)	-	-	2	3	2 $\frac{1}{2}$
	(3)	-	-	2	7	11
8.	-	-	-	2	8	5 $\frac{1}{4}$
9.	-	-	-	3	0	3 $\frac{3}{4}$
10.	-	-	-	2	16	11 $\frac{1}{2}$
11.	-	-	-	10	16	8
12.	-	-	-	3	0	9
13.	-	-	-	2	17	3
						14.

	£.	s.	d.
14.	3	2	3 $\frac{1}{2}$
15.	3	1	4
16.	2	17	10 $\frac{1}{2}$
17.	3	13	11
18.	3	13	5
	<u>58</u>	<u>13</u>	<u>3$\frac{1}{2}$</u>

Average 2l. 18 s. 7 d.

PRODUCT.

Produce per acre of Experiment N°	Q.	B.	P.
1.	2	0	1
2.	1	5	0
3.	1	6	0
4.	2	2	0
5.	3	6	0
6.	4	0	0
7. (1)	1	0	0
(2)	1	2	0
(3)	1	6	0
8.	0	2	3
9.	2	0	2
10.	2	4	0
11.	5	0	0
12.	2	2	0
13.	3	4	0
14.	3	4	0
15.	1	6	0
16.	3	0	0
17.	6	0	0
18.	2	4	0
	<u>51</u>	<u>6</u>	<u>2</u>

Average 2 quarters 4 bushels 2 pecks.

PROFIT

PROFIT and LOSS.

					£.	s.	d.
Profit per acre of Experiment N° 2.	-	-	-	-	0	9	0
3.	-	-	-	-	0	12	7 $\frac{1}{2}$
4.	-	-	-	-	0	7	0
6.	-	-	-	-	3	11	4 $\frac{3}{4}$
7. (3)	-	-	-	-	0	8	1
10.	-	-	-	-	0	10	6 $\frac{1}{2}$
13.	-	-	-	-	1	13	9
14.	-	-	-	-	1	4	2 $\frac{1}{4}$
16.	-	-	-	-	0	17	1 $\frac{1}{2}$
17.	-	-	-	-	4	14	1

14 7 9 $\frac{1}{2}$

Loss, Experiment N° 1.	-	-	-	-	0	5	6
5.	-	-	-	-	0	14	6 $\frac{3}{4}$
7. (1)	-	-	-	-	0	8	10 $\frac{1}{2}$
(2)	-	-	-	-	0	5	2 $\frac{1}{2}$
8.	-	-	-	-	1	19	6 $\frac{3}{4}$
9.	-	-	-	-	0	2	6 $\frac{3}{4}$
11.	-	-	-	-	7	15	2
12.	-	-	-	-	0	6	9
15.	-	-	-	-	0	15	10
18.	-	-	-	-	0	10	5

13 4 5 $\frac{1}{4}$

Profit,	-	-	-	-	-	14	7	9 $\frac{1}{2}$
Loss,	-	-	-	-	-	13	4	5 $\frac{1}{4}$
						1	3	4 $\frac{1}{4}$

Average profit, 1 s. 2 d.

PRICES of the PRODUCT.

					£.	s.	d.
In 1764.	-	-	-	-	1	12	0
1765.	-	-	-	-	1	12	0
1766.	-	-	-	-	1	6	0
1767.	-	-	-	-	1	6	0

Average, 1 l. 9 s.

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From hence we find that two quarters are the crop that just pays the average expence of this culture.

From these tables we find, that the average product of all these various crops and modes of culture, something more than pays the expence of cultivation. This is, upon the whole, more than I expected; for a few of the experiments were treated in an expensive stile, which I apprehended would not, by any means, repay the expence. But the merit of the respective modes of drilling, and other treatment, will best appear by stating them differently.

Horfe-hoed COMMON CROPS.

EXPENCES.

										£.	s.	d.
N ^o 1.	-	-	-	-	-	-	-	-	-	3	10	6
2.	-	-	-	-	-	-	-	-	-	2	3	0
3.	-	-	-	-	-	-	-	-	-	2	3	4 $\frac{1}{2}$
4.	-	-	-	-	-	-	-	-	-	3	5	0
7.	-	(1)	-	-	-	-	-	-	-	2	0	10 $\frac{3}{4}$
		(2)	-	-	-	-	-	-	-	2	3	2 $\frac{1}{2}$
		(3)	-	-	-	-	-	-	-	2	7	11
8.	-	-	-	-	-	-	-	-	-	2	8	5 $\frac{1}{4}$
9.	-	-	-	-	-	-	-	-	-	3	0	3 $\frac{3}{4}$
12.	-	-	-	-	-	-	-	-	-	3	0	9
15.	-	-	-	-	-	-	-	-	-	3	1	4
Average, 2l. 13s. 1 $\frac{1}{2}$ d.										29	4	8 $\frac{1}{2}$

PRODUCT.

										Q.	B.	P.
Experiment N ^o 1.	-	-	-	-	-	-	-	-	-	2	0	1
2.	-	-	-	-	-	-	-	-	-	1	5	0
3.	-	-	-	-	-	-	-	-	-	1	6	0
4.	-	-	-	-	-	-	-	-	-	2	2	0
7.	-	(1)	-	-	-	-	-	-	-	1	0	0
		(2)	-	-	-	-	-	-	-	1	2	0
		(3)	-	-	-	-	-	-	-	1	6	0
8.	-	-	-	-	-	-	-	-	-	0	2	3
9.	-	-	-	-	-	-	-	-	-	2	0	2
12.	-	-	-	-	-	-	-	-	-	2	2	0
15.	-	-	-	-	-	-	-	-	-	1	6	0
Average, 1 quarter 5 bushels,										18	0	2

PROFIT

PROFIT AND LOSS.

					£.	s.	d.
Profit in Experiment N ^o	2.	-	-	-	0	9	0
	3.	-	-	-	0	12	7 $\frac{1}{2}$
	4.	-	-	-	0	7	0
	7.	(3)	-	-	0	8	1
					1	16	8 $\frac{1}{2}$

Loss in Experiment N ^o	1.	-	-	-	0	5	6
	7.	(1)	-	-	0	8	10 $\frac{1}{2}$
		(2)	-	-	0	5	2 $\frac{1}{2}$
	8.	-	-	-	1	19	6 $\frac{3}{4}$
	9.	-	-	-	0	2	6 $\frac{3}{4}$
	12.	-	-	-	0	6	9
	15.	-	-	-	0	15	10
					4	4	3 $\frac{1}{2}$
Profit,	-	-	-	-	1	16	8 $\frac{1}{2}$
Loss,	-	-	-	-	2	7	7

Average, 4 s. 3 $\frac{1}{2}$ d.

From this account it is very evident that what profit appeared upon the drilled crops in general, did not arise from the common horse-hoed ones; that is, from such as were not particularly favoured in manuring, &c. but either from the equally distant rows, or the manured ones; by which we should distinguish between these modes of culture. The loss on horse-hoeing is not so great as to be totally decisive against it on all soils; 4 s. 3 d. on the wrong side of the account will not justify any such general conclusions. I have little doubt but that a more spirited attention, on very peculiar soils, may turn so small a loss to profit. The variation is not considerable, and the difference occasioned by soil is very great.

Horfe-hoed Crops succeeding others completely managed.

EXPENCES.

				£.	s.	d.
Experiment N° 10.	-	-	-	2	16	11½
13.	-	-	-	2	17	3
16.	-	-	-	2	17	10½
				8	12	1

Average, 2l. 17s. 4d.

PRODUCT.

					Q.	B.	P.
Experiment N° 10.	-	-	-	-	2	4	0
13.	-	-	-	-	3	4	0
16.	-	-	-	-	3	0	0
					9	0	0

Average, 3 quarters.

PROFIT AND LOSS.

					£.	s.	d.
N° 10. Profit,	-	-	-	-	0	10	6½
13.	-	-	-	-	1	13	9
16.	-	-	-	-	0	17	1½
					3	1	5

Average, 1l. 0s. 5¼d.

It is from this slight sketch very observable, that horfe-hoeing pays a confiderable profit on land in good heart. These three crops succeeded others that were prepared for by the perfection of tillage and manures; they yield, on an average, above 1 l. an acre profit; whereas the commonly conducted trials produced above 4s. loss. This difference confirms my former observations, that on other soils the horfe-hoeing culture might succeed variously. We here find, that on a soil whose natural richness or other qualities equalled the artificial ones of this, it would be many times more beneficial. I throw all comparison with the common husbandry here out of the question, and consider only the modes of drilling. It is in that light evident, that horfe-hoeing pease will, in certain cases, prove

prove profitable, but if we are to judge from these trials, it will be only on rich soils.

Horfe-hoed Crops completely managed.

EXPENCES.

						£.	s.	d.
Experiment N ^o 5.	-	-	-	-	-	6	14	6 $\frac{1}{4}$
II.	-	-	-	-	-	10	16	8
						17	11	2 $\frac{3}{4}$

Average 8l. 15s. 7 $\frac{1}{4}$ d.

PRODUCE.

						Q.	B.	P.
Experiment N ^o 5.	-	-	-	-	-	3	6	0
II.	-	-	-	-	-	5	0	0
						8	6	0

Average 4 quarters 3 bushels.

PROFIT and LOSS.

						£.	s.	d.
Experiment N ^o 5. Loss,	-	-	-	-	-	0	14	6 $\frac{3}{4}$
II.	-	-	-	-	-	7	15	2
						8	9	8 $\frac{3}{4}$

Average 4l. 4s. 10 $\frac{1}{4}$ d.

The loss upon these crops is so great, that I think they prove plainly the horfe-hoeing mode is unequal to repaying such expenfive modes of culture, and especially as the produce is considerable; four quarters three bushels are a great product: now the exertions of tillage and manure producing extraordinary shews, that they could not arrive at the perfection requisite; although the advantages took effect in pushing the crop far beyond the common ones. And the loss is upon the whole so great, that it should deter any one from trusting to the method for reimbursing such great expences.

EQUALLY

EQUALLY DISTANT ROWS.

EXPENCES.

								£.	s.	d.
N° 6.	-	-	-	-	-	-	-	2	15	7 $\frac{1}{4}$
14.	-	-	-	-	-	-	-	3	2	3 $\frac{3}{4}$
17.	-	-	-	-	-	-	-	3	13	11
								<u>9</u>	<u>11</u>	<u>10</u>

Average 3 l. 3 s. 11 $\frac{1}{4}$ d.

PRODUCE.

								Q.	B.	P.
N° 6.	-	-	-	-	-	-	-	4	0	0
14.	-	-	-	-	-	-	-	3	4	0
17.	-	-	-	-	-	-	-	6	0	0
								<u>13</u>	<u>4</u>	<u>0</u>

Average, 4 quarters 4 bushels.

PROFIT and LOSS.

								£.	s.	d.
N° 6. Profit,	-	-	-	-	-	-	-	3	11	4 $\frac{3}{4}$
14.	-	-	-	-	-	-	-	1	4	2 $\frac{1}{4}$
17.	-	-	-	-	-	-	-	4	14	1
								<u>9</u>	<u>9</u>	<u>8</u>

Average, 3 l. 3 s. 2 $\frac{1}{2}$ d.

N° 17 of these succeeding a crop under complete management; I shall deduct it and state the average of the other two.

EXPENCES.

								£.	s.	d.
N° 6.	-	-	-	-	-	-	-	2	15	7 $\frac{1}{4}$
14.	-	-	-	-	-	-	-	3	2	3 $\frac{3}{4}$
								<u>5</u>	<u>17</u>	<u>11</u>

Average, 2 l. 18 s. 11 $\frac{1}{2}$ d.

PRO-

P R O D U C T.

								Q.	B.	P.
N ^o 6.	-	-	-	-	-	-	-	4	0	0
14.	-	-	-	-	-	-	-	3	4	0
								<hr/>	<hr/>	<hr/>
								7	4	0

Average, 3 quarters 6 bushels.

P R O F I T and L O S S.

								£.	s.	d.
N ^o 6. Profit,	-	-	-	-	-	-	-	3	11	4 $\frac{1}{2}$
14.	-	-	-	-	-	-	-	1	4	2 $\frac{1}{4}$
								<hr/>	<hr/>	<hr/>
								4	15	7

Average, 2 l. 7 s. 9 $\frac{1}{2}$ d.

Upon this account it is to be observed, that the product and profit of this kind of drilling are very great. Three quarters six bushels *per* acre, is a very considerable average of crops that have no peculiar advantage: and a clear profit of 2 l. 7 s. 9 $\frac{1}{2}$ d. *per* acre is also high, and far beyond the general run of the neighbouring husbandry. N^o 17, which succeeds a crop in complete management, shews plainly that this method will repay in a noble manner any expences, or the occupying the best of land. Six quarters *per* acre are a vast product; and never I believe, or scarcely so, equalled in common management. The profit 4 l. 14 s. 1 d. *per* acre likewise shews, that the expences are far enough from swallowing up the product. The state of both is upon the whole greatly in favour of equally distant drilling. The comparison between this method and horse-hoeing, both equal in advantage, will appear by stating as follows:

E X P E N C E S.

								£.	s.	d.
Equally distant rows,	-	-	-	-	-	-	-	2	18	11 $\frac{1}{2}$
Horse-hoed,	-	-	-	-	-	-	-	2	13	1 $\frac{1}{2}$
								<hr/>	<hr/>	<hr/>
Excess of the former,	-	-	-	-	-	-	-	0	5	10

P R O D U C T.

P R O D U C T.

							Q. B. P.
Equally distant rows,	-	-	-	-	-	-	3 6 0
Horse-hoed.	-	-	-	-	-	-	1 5 0
Superiority of the former,	-	-	-	-	-	-	2 1 0

P R O F I T and L O S S.

							£. s. d.
Equally distant rows, profit,	-	-	-	-	-	-	2 7 9 $\frac{1}{2}$
Horse-hoed, loss,	-	-	-	-	-	-	0 4 3 $\frac{1}{4}$
Superiority of the former,	-	-	-	-	-	-	2 12 1 $\frac{1}{4}$

This comparison is extremely decisive: the expences of the equally distant drilling are, it is true, something higher than those of the horse-hoeing; but the amount of the excess is nothing to the greatness of the superiority in product and profit. Two quarters one bushel *per* acre greater produce from equally distant rows than from horse-hoeing is a vast difference; and 2 l. 12 s. 1 $\frac{1}{4}$ d. superiority in profit is immense; it is beyond calculation. Nor is this superiority confined to commonly conducted crops: from the following account we shall find that it holds equally in succeeding crops completely managed.

E X P E N C E S.

							£. s. d.
Equally distant,	-	-	-	-	-	-	3 13 11
Horse-hoed,	-	-	-	-	-	-	2 17 4
Excess of the former,	-	-	-	-	-	-	0 16 7

P R O D U C T.

							Q. B. P.
Equally distant,	-	-	-	-	-	-	6 0 0
Horse-hoed,	-	-	-	-	-	-	3 0 0
Superiority,	-	-	-	-	-	-	3 0 0

P R O F I T.

PROFIT and LOSS.

					£.	s.	d.
Equally distant profit,	-	-	-	-	4	14	1
Horse-hoed,	-	-	-	-	1	0	5 $\frac{1}{4}$
Superiority,	-	-	-	-	3	13	7 $\frac{3}{4}$

The equally distant drilling is here far superior to horse hoeing; it is from thence very evident, that it is to be depended upon much more securely for the reimbursement of great expences, or for sowing on very good land.

Respecting the number of rows, the method of discovering their merit fairly, will be to state only the commonly conducted horse-hoed crops, or in other words, those whose principal variations are the numbers of the rows; if there appears any remarkable effect annexed to either system, we may venture to conclude the cause to be such variations.

DOUBLE ROWS.

EXPENCES.

								£.	s.	d.
N ^o 1.	-	-	-	-	-	-	-	3	10	6
2.	-	-	-	-	-	-	-	2	3	0
3.	-	-	-	-	-	-	-	2	3	4 $\frac{1}{2}$
7. (1)	-	-	-	-	-	-	-	2	0	10 $\frac{1}{2}$
8.	-	-	-	-	-	-	-	2	8	5 $\frac{1}{4}$
								12	6	2 $\frac{1}{4}$

Average 2 l. 9 s. 2 $\frac{1}{4}$ d.

PRODUCE.

								Q	B.	P.
N ^o 1.	-	-	-	-	-	-	-	2	0	1
2.	-	-	-	-	-	-	-	1	5	0
3.	-	-	-	-	-	-	-	1	6	0
7. (1)	-	-	-	-	-	-	-	1	0	0
8.	-	-	-	-	-	-	-	0	2	3
								6	6	0

Average 1 quarter 2 bushels 3 pecks.

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PROFIT

P R O D U C T.

							Q.	B.	P.
Equally distant rows,	-	-	-	-	-	-	3	6	0
Horse-hoed.	-	-	-	-	-	-	1	5	0
Superiority of the former,	-	-	-	-	-	-	2	1	0

P R O F I T and L O S S.

							£.	s.	d.
Equally distant rows, profit,	-	-	-	-	-	-	2	7	9 $\frac{1}{2}$
Horse-hoed, loss,	-	-	-	-	-	-	0	4	3 $\frac{1}{4}$
Superiority of the former,	-	-	-	-	-	-	2	12	1 $\frac{1}{4}$

This comparison is extremely decisive: the expences of the equally distant drilling are, it is true, something higher than those of the horse-hoeing; but the amount of the excess is nothing to the greatness of the superiority in product and profit. Two quarters one bushel *per* acre greater produce from equally distant rows than from horse-hoeing is a vast difference; and 2 l. 12 s. 1 $\frac{1}{4}$ d. superiority in profit is immense; it is beyond calculation. Nor is this superiority confined to commonly conducted crops: from the following account we shall find that it holds equally in succeeding crops completely managed.

E X P E N C E S.

							£.	s.	d.
Equally distant,	-	-	-	-	-	-	3	13	11
Horse-hoed,	-	-	-	-	-	-	2	17	4
Excess of the former,	-	-	-	-	-	-	0	16	7

P R O D U C T.

							Q.	B.	P.
Equally distant,	-	-	-	-	-	-	6	0	0
Horse-hoed,	-	-	-	-	-	-	3	0	0
Superiority,	-	-	-	-	-	-	3	0	0

P R O F I T.

P R O F I T and L O S S.

						£.	s.	d.
Equally distant profit,	-	-	-	-	-	4	14	1
Horse-hoed,	-	-	-	-	-	1	0	5 $\frac{1}{4}$
Superiority,	-	-	-	-	-	3	13	7 $\frac{3}{4}$

The equally distant drilling is here far superior to horse hoeing; it is from thence very evident, that it is to be depended upon much more securely for the reimbursement of great expences, or for sowing on very good land.

Respecting the number of rows, the method of discovering their merit fairly, will be to state only the commonly conducted horse-hoed crops, or in other words, those whose principal variations are the numbers of the rows; if there appears any remarkable effect annexed to either system, we may venture to conclude the cause to be such variations.

D O U B L E R O W S.

E X P E N C E S.

									£.	s.	d.
N ^o 1.	-	-	-	-	-	-	-	-	3	10	6
2.	-	-	-	-	-	-	-	-	2	3	0
3.	-	-	-	-	-	-	-	-	2	3	4 $\frac{1}{2}$
7. (1)	-	-	-	-	-	-	-	-	2	0	10 $\frac{1}{2}$
8.	-	-	-	-	-	-	-	-	2	8	5 $\frac{1}{4}$
									12	6	2 $\frac{1}{4}$

Average 2l. 9s. 2 $\frac{1}{4}$ d.

P R O D U C E.

									Q.	B.	P.
N ^o 1.	-	-	-	-	-	-	-	-	2	0	1
2.	-	-	-	-	-	-	-	-	1	5	0
3.	-	-	-	-	-	-	-	-	1	6	0
7. (1)	-	-	-	-	-	-	-	-	1	0	0
8.	-	-	-	-	-	-	-	-	0	2	3
									6	6	0

Average 1 quarter 2 bushels 3 pecks.

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P R O F I T

P R O F I T and L O S S.

									£.	s.	d.
N ^o 2. Profit,	-	-	-	-	-	-	-	-	0	9	0
3.	-	-	-	-	-	-	-	-	0	12	7 $\frac{1}{2}$
									1	1	7 $\frac{1}{2}$
N ^o 1. Loss,	-	-	-	-	-	-	-	-	0	5	6
7. (1)	-	-	-	-	-	-	-	-	0	8	10 $\frac{1}{2}$
8.	-	-	-	-	-	-	-	-	1	19	6 $\frac{3}{4}$
									2	13	11 $\frac{1}{4}$
									1	1	7 $\frac{1}{2}$
Loss,	-	-	-	-	-	-	-	-	1	12	3 $\frac{1}{4}$
Average 6s. 5 $\frac{1}{2}$ d.											

T R E B L E R O W S.

E X P E N C E S.

									£.	s.	d.
N ^o 4.	-	-	-	-	-	-	-	-	3	5	0
7. (2)	-	-	-	-	-	-	-	-	2	3	2 $\frac{1}{2}$
9.	-	-	-	-	-	-	-	-	3	0	3 $\frac{1}{4}$
12.	-	-	-	-	-	-	-	-	3	0	9
15.	-	-	-	-	-	-	-	-	3	1	4
									14	10	7 $\frac{1}{4}$
Average, 2l. 18s. 1 $\frac{1}{4}$ d.											

P R O D U C E.

									Q.	B.	P.
N ^o 4.	-	-	-	-	-	-	-	-	2	2	0
7. (2)	-	-	-	-	-	-	-	-	1	2	0
9.	-	-	-	-	-	-	-	-	2	0	2
12.	-	-	-	-	-	-	-	-	2	2	0
15.	-	-	-	-	-	-	-	-	1	6	0
									9	4	2

Average, 1 quarter, 7 bushels, 1 peck.

P R O F I T

PROFIT and LOSS.

							£.	s.	d.
N ^o 4. Profit,	-	-	-	-	-	-	0	7	0
7. (2) Loss,	-	-	-	-	-	-	0	5	2 $\frac{1}{2}$
9.	-	-	-	-	-	-	0	2	6 $\frac{1}{2}$
12.	-	-	-	-	-	-	0	6	9
15.	-	-	-	-	-	-	0	15	10
							1	10	4 $\frac{1}{2}$
							0	7	0
Loss	-	-	-	-	-	-	1	3	4 $\frac{1}{2}$
Average, 4 s. 8 d.									

QUADRUPLE ROWS.

EXPENCES.

							£.	s.	d.
N ^o 7. (3)	-	-	-	-	-	-	2	7	11

PRODUCE.

							Q.	B.	P.
N ^o 7. (3)	-	-	-	-	-	-	1	6	0

PROFIT.

							£.	s.	d.
N ^o 7. (3)	-	-	-	-	-	-	0	8	1

In this comparison the numbers of each not being similar, I do not offer it as a complete parallel; but there is nevertheless much reason to conclude from it, that four rows are preferable to three, and three superior to two. And this general result coincides with the particulars of the comparative experiments. Indeed the great superiority of equally distant rows to the horse-hoed crops, would alone give us reason to draw this conclusion, since the more the rows the nearer the resemblance to that beneficial mode.

One division more of these crops remains to be made, that of soil. They must be divided into *gravelly loam* and *clayey loam*; and for this purpose we must select those trials which are most numerous and most similar: these are the common horse-hoed ones.

C L A Y.

EXPENCES.

N ^o		£.	s.	d.
1.	- - - - -	3	10	6
3.	- - - - -	2	3	4 $\frac{1}{2}$
8.	- - - - -	2	8	5 $\frac{1}{4}$
12.	- - - - -	3	0	9
15.	- - - - -	3	1	4
				<hr/>
				14 4 4 $\frac{3}{4}$

Average, 2l. 16s. 0 $\frac{3}{4}$ d.

P R O D U C T.

N ^o		Q.	B.	P.
1.	- - - - -	2	0	1
3.	- - - - -	1	6	0
8.	- - - - -	0	2	3
12.	- - - - -	2	2	0
15.	- - - - -	1	6	0
				<hr/>
				8 1 0

Average, 1 quarter 5 bushels.

P R O F I T and L O S S.

N ^o		£.	s.	d.
3. Profit,	- - - - -	0	12	7 $\frac{1}{2}$
1. Loss,	- - - - -	0	5	6
8.	- - - - -	1	19	6 $\frac{3}{4}$
12.	- - - - -	0	6	9
15.	- - - - -	0	15	10
				<hr/>
				3 7 7 $\frac{3}{4}$
				<hr/>
				0 12 7 $\frac{1}{2}$
				<hr/>
Loss,	- - - - -	2	15	0 $\frac{1}{4}$

Average, 11s.

GRAVEL.

GRAVEL.

EXPENCES.

								£.	s.	d.
N ^o 2.	-	-	-	-	-	-	-	2	3	0
4.	-	-	-	-	-	-	-	3	5	0
7.	(1)	-	-	-	-	-	-	2	0	10 $\frac{1}{2}$
	(2)	-	-	-	-	-	-	2	3	2 $\frac{1}{2}$
	(3)	-	-	-	-	-	-	2	7	11
9.	-	-	-	-	-	-	-	3	0	3 $\frac{3}{4}$
								15	0	3 $\frac{3}{4}$

Average, 21. 10 s. 0 $\frac{1}{2}$ d.

PRODUCE.

								Q.	B.	P.
N ^o 2.	-	-	-	-	-	-	-	1	5	0
4.	-	-	-	-	-	-	-	2	2	0
7.	(1)	-	-	-	-	-	-	1	0	0
	(2)	-	-	-	-	-	-	1	2	0
	(3)	-	-	-	-	-	-	1	6	0
9.	-	-	-	-	-	-	-	2	0	2
								9	7	2

Average, 1 quarter, 5 bushels, 1 peck.

PROFIT and LOSS.

								£.	s.	d.
N ^o 2. Profit,	-	-	-	-	-	-	-	0	9	0
4.	-	-	-	-	-	-	-	0	7	0
7.	(3)	-	-	-	-	-	-	0	8	1
								1	4	1
N ^o 7. Loss,	(1)	-	-	-	-	-	-	0	8	10 $\frac{1}{2}$
	(2)	-	-	-	-	-	-	0	5	2 $\frac{1}{2}$
9.	-	-	-	-	-	-	-	0	2	6 $\frac{3}{4}$
								0	16	7 $\frac{3}{4}$

Profit,

	£.	s.	d.
Profit, - - - - -	1	4	1
Loss, - - - - -	0	16	7 $\frac{1}{4}$
Profit, - - - - -	0	7	5 $\frac{1}{4}$
Average, 1 s. 2 $\frac{1}{4}$ d.			
Loss on clay, - - - - -	0	11	0
Profit on gravel, - - - - -	0	1	2 $\frac{1}{4}$
Superiority of the latter, - - - - -	0	12	2 $\frac{1}{4}$

This comparison is very decisive in favour of the gravelly soil; and I should thereon remark, that this is precisely the opinion of all the farmers in this neighbourhood, who scarcely ever sow white pease on any but light soils. However in the horse-hoeing culture, the rows on five feet ridges arched up lie so high and dry, that the crop must undoubtedly fare much better than if level or nearly so. And this should be an inducement to all farmers to appropriate the lighter soils to these sort of pease, for the difference of the profit from them is very great.

S E C T. III.

Comparison between the the Old and New HUSBANDRY in the
CULTURE of PEASE.

HOWEVER clear an experienced person's ideas may be, on any comparative point in husbandry, yet the world has been so long amused with reasoning and conjectures, that it is required of every person, who pretends to publish experiments, to execute some on every point. This renders experimental husbandry, when minutely conducted, extremely tedious. If a person is ever so thoroughly convinced in his own mind that a practice is either beneficial or absurd, yet his assuring the world of such his firm opinion is of very little consequence: the world will receive neither assurances nor opinions; it will depend on nothing but the accurate register of experiments. The reason is undoubtedly good: the authors of the wildest and most extravagant schemes, all abound with the strongest assurances of success. If you take their word, you will have very little doubt of making mountains of gold from the touch of their farming wands. While such pretenders abound equally with bold assertions and positive assurances as the most experienced cultivator, how are the unskilled readers to judge between them?—to distinguish between the rational and the absurd? For these reasons, I have felt the necessity, throughout these papers, of proving some points, of which I conceived I had a very accurate idea. This was, in some measure, the case with the culture of pease:—after a little experience, I had formed a strong idea of the most proper method of cultivating them. But clear as such idea was to myself, yet it would by no means have satisfied the public; however, as the trials I have made on this point have been pretty uniform in the result, it will render the insertion of the fewer requisite in this register.

EXPERIMENT

EXPERIMENT N° I.

Culture, expences, and produce of half an acre, in two divisions, field M*, 1764.

CULTURE.

This piece yielded turneps in 1763, which were drawn for cattle in January. In March ploughed it up: gave another stirring the beginning of April, throwing the half of it into five feet ridges, and leaving half flat. The end of the same month ploughed it for the last time, arching up the ridges, and stirring the other part again on the flat. Sowed the latter with three pecks of white boiling pease, harrowing them in; and at the same time harrowed the ridges, and drilled them each with three rows, one foot asunder, using two pecks of the same pease. Horse-hoed the drilled part the end of May, and in a day or two after hand-hoed the rows, the men picking out the weeds that grew among the plants. The middle of June gave them the second horse-hoeing: but in this operation much mischief was done the plants, by treading upon and breaking such of the stalks as trailed into the intervals. I did not stay more than a week before I gave a third horse-hoeing in the same direction as the last; that is, striking the center furrows, and banking up the rows. The stalks sprawled about too much to allow of a fourth; but a thorough hand-weeding was given. Nothing was done to the broadcast part, except once hand-weeding. They were both cut the beginning of August. Produce of the horse-hoed three bushels and half a peck; of the broadcast four bushels three pecks.

Account of the DRILLED ROOD.

EXPENCES.

							£.	s.	d.
Three ploughings,	-	-	-	-	-	-	0	0	9
Harrowing,	-	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Drilling,	-	-	-	-	-	-	0	0	0 $\frac{1}{4}$
Seed,	-	-	-	-	-	-	0	2	0
Three horse-hoeings,	-	-	-	-	-	-	0	0	6
Two hand-hoeings,	-	-	-	-	-	-	0	2	2
Two weedings,	-	-	-	-	-	-	0	0	9
Hooking,	-	-	-	-	-	-	0	0	2

Harvesting,

Harvesting,
Threshing,

£. s. d.

0 0 4

0 0 7

0 7 4 $\frac{1}{4}$

0 4 3

0 11 7 $\frac{1}{4}$

Rent,

PRODUCE.

3 Bushels and half a peck, at 32 s.

0 12 6

Expences,

0 11 7 $\frac{1}{4}$

Profit,

0 0 10 $\frac{3}{4}$

Ploughing,

£. s. d.

0 1 1 $\frac{1}{2}$

Harrowing,

0 0 1 $\frac{1}{2}$

Drilling,

0 0 0 $\frac{1}{2}$

Horse-hoeing,

0 0 3 $\frac{3}{4}$

Carting in harvest,

0 0 0 $\frac{1}{4}$

0 1 8

The above profit,

0 0 10 $\frac{3}{4}$

Loss, 3 s. 1 d. per acre,

0 0 9 $\frac{1}{4}$

Account of the BROADCAST.

EXPENCES.

Three ploughings,

£. s. d.

0 0 9

Harrowing,

0 0 0 $\frac{1}{2}$

Sowing,

0 0 0 $\frac{3}{4}$

Seed,

0 3 0

Weeding,

0 0 6

Hooking,

0 0 9

Harvesting,

0 0 6

Threshing,

0 0 8

0 6 3 $\frac{1}{4}$

0 4 3

0 10 6 $\frac{1}{4}$

Rent, &c.

PRODUCE.

4 Bushels 3 pecks, at 32 s.

Expences,

£.	s.	d.
0	19	0
0	10	6 $\frac{1}{4}$
<hr/>		
0	8	5 $\frac{1}{4}$

Ploughing,

Harrowing,

Carting in harvest,

£.	s.	d.
0	1	1 $\frac{1}{2}$
0	0	1 $\frac{1}{2}$
0	0	0 $\frac{1}{4}$
<hr/>		
0	1	3 $\frac{3}{4}$

Clear profit, 1 l. 8 s. 8 d. *per* acre,Profit *per* acre by the broadcast,

Loss by the drilled,

Former superior by

£.	s.	d.
0	7	2
<hr/>		
1	8	8
<hr/>		
0	3	1
<hr/>		
1	11	9

OBSERVATIONS.

The common method has a great superiority over the drills in this trial; but not so great as I expected from viewing the crop while growing. My men asserted, with the utmost confidence, that the broadcast rood would yield *six times* as much as the drilled one, and were much surprized to find themselves so greatly mistaken. As no accidents of any kind happened to either of the pieces, there is great reason to suppose, from this trial, that the new method is vastly inferior to the common one in the culture of pease. As to the state of the land after the crops, I do not think there is much to chuse. The broadcast half is very mellow and free from weeds, and exceeds the spaces in the other on which the rows were.

EXPERIMENT N^o 2.

Culture, expences, and produce of half an acre, in two divisions, field L*, 1764.

CULTURE.

This piece was fallowed during 1763, receiving by the October of that year six ploughings, the last of which threw it on to the ridge. In March two more earths were given, dividing it into two roods, and leaving

leaving one on the common ridge, and the other on five feet ones. Arched up the latter by the ninth earthen the end of April; harrowed it fine, and drilled each ridge with three rows of white pease, using two pecks of seed: ploughed at the same time the other half, reversing the ridges, and harrowed in three pecks of the same seed with common ridge harrows. Horse-hoed the rows the last week in May, turning a furrow from the pease, and raising a small ridge along the middle of the intervals. In a few days after hand-hoed the rows clean with eight inch hoes, loosening the land thoroughly, and plucking out the weeds that grew in the rows. June 8th gave the second horse-hoeing, reversing the last; but this was not done with the same ease: it was irregularly performed, on account of the stalks of the pease spreading. In some places they fell into the furrows, in others on to the ridges, which made the work very ticklish. Hand-hoed them again directly in the same manner as before, but with more difficulty, from the growth of the pease. The third horse-hoeing could not be given in the manner I designed, that of reversing the second: I was obliged to strike the intervals in the same path as the second moved in, banking up the ridges; but it was not done without damaging the crop by the horses and the plough. After this the rows received a weeding, which completed their culture. The pease were hooked the beginning of August: product three bushels. The broadcast rood, which received only a slight weeding, was cut at the same time: produce six bushels.

Account of the DRILLED ROOD.

EXPENCES.

							£.	s.	d.
Nine ploughings,	-	-	-	-	-	-	0	2	3
Harrowing,	-	-	-	-	-	-	0	0	0 ¹ / ₂
Water-furrowing,	-	-	-	-	-	-	0	0	3
Drilling.	-	-	-	-	-	-	0	0	0 ³ / ₄
Seed,	-	-	-	-	-	-	0	2	0
Three horse-hoeings,	-	-	-	-	-	-	0	0	6
Two hand-hoeings,	-	-	-	-	-	-	0	2	4
Two weedings,	-	-	-	-	-	-	0	0	5
Hooking,	-	-	-	-	-	-	0	0	3

300

P U L S E.

Book II.

Harvesting,
Threshing,

£.	s.	d.
0	0	6
0	0	6

Rent,

0	9	1 $\frac{1}{4}$
0	8	6
<hr/>		
0	17	7 $\frac{1}{4}$

P R O D U C E.

3 Bushels,

0	12	0
---	----	---

Loss,

0	5	7 $\frac{1}{4}$
---	---	-----------------

Ploughing,

£. s. d.

Harrowing,

0 3 4 $\frac{1}{2}$

Drilling,

0 0 1 $\frac{1}{2}$

Horse-hoeing,

0 0 0 $\frac{1}{2}$

Carting in harvest,

0 0 3 $\frac{3}{4}$

0	0	0 $\frac{3}{4}$
---	---	-----------------

0	3	0
---	---	---

Total loss,

0	9	6 $\frac{1}{4}$
---	---	-----------------

Account of the BROADCAST ROOD.

E X P E N C E S.

Nine ploughings,

£. s. d.

Harrowing,

0 2 3

Water-furrowing,

0 0 0 $\frac{1}{2}$

Sowing,

0 0 3

Seed,

0 0 0 $\frac{3}{4}$

Weeding,

0 3 0

Cutting,

0 0 6

Harvesting,

0 0 7 $\frac{1}{2}$

Threshing,

0 0 8

0	1	0
---	---	---

Rent, &c.

0	8	4 $\frac{3}{4}$
---	---	-----------------

0	8	6
---	---	---

0	16	10 $\frac{3}{4}$
---	----	------------------

PRO-

PRODUCE.

6 Bushels at 32 s.	-	-	-	-	£	s.	d.
Expences,	-	-	-	-	0	16	10 $\frac{1}{4}$
Profit,	-	-	-	-	0	7	1 $\frac{1}{4}$
					£	s.	d.
Ploughing,	-	-	-	-	0	3	4 $\frac{1}{2}$
Harrowing,	-	-	-	-	0	0	1 $\frac{1}{2}$
Carting in harvest,	-	-	-	-	0	0	0 $\frac{3}{4}$
					0	3	6 $\frac{1}{4}$
Clear profit, 14 s. 2 d. <i>per</i> acre,	-	-	-	-	0	3	6 $\frac{1}{2}$
Loss, by the horse-hoed,	-	-	-	-	0	9	6 $\frac{1}{4}$
Profit, by the broad-cast,	-	-	-	-	0	3	6 $\frac{1}{2}$
Superiority of the latter,	-	-	-	-	0	13	0 $\frac{3}{4}$

OBSERVATIONS.

This trial is clearly in favour of the common husbandry; but neither of the crops are so good as I had great reason to expect: a whole year's fallow is a very uncommon preparation for pease, and ought to have been attended, according to my ideas, by a very different crop; the reason why it was not better I am utterly unable to account for. Possibly the wetness of the season on this moist land, was far from agreeing with the tenderness of this pea. It is an idea very common in this neighbourhood, that the white pease will do only on dry sandy or gravelly lands. Both these roods were on the ridge, and the drilled one on high arched ridges which kept them dry, but yet the nature of the soil may perhaps be too moist, however high the ridges. This point must be referred to future trials for determination.

EXPERIMENT N° 3.

Culture, expences, and produce of three roods, field R, 1764.

CULTURE.

Yielded turneps in 1763, which were drawn for cattle in December. Ploughed up the land the end of March. Stirred it again the 5th of April, dividing it into three parts; threw one on to five feet ridges, and left the other two flat. The 24th of the same month, gave it the third earth,

each, arching up the ridges, and leaving the other flat as before. The next day harrowed the ridges thrice, and drilled each with three rows of white pease, using two pecks. Also harrowed the flat roods thrice; and drilled one in equally distant rows, one foot asunder, with three pecks of the same pease. Sowed the other with the same quantity broadcast. May 26th horse-hoed the ridges, turning furrows *from* the plants. The 28th hand-hoed all three with six-inch hoes; the broadcast pease were cut up where they grew in knots. And the weeds in all of them that came up in the rows, or close to the pease, so that the hoes could not separate them, were plucked out by hand. June 6th horse-hoed the ridges again, the contrary way to the last; but some damage was done both by the treading of the horses and the plough's tearing some of the stalks. The 9th hand-hoed both the drilled roods again. The 13th horse-hoed the ridges again, clearing the furrows by striking them the same way as the last horse-hoeing; that is, banking up the ridges. This operation like the last hoeing did some mischief, but being further from the rows it was not so great. Hand-weeded all three once after this, which completed the culture. As soon as the equally distant rows joined, they seemed to all appearance as a broadcast crop; and when the horse-hoed rood was nearly at its growth, it sprawled about the whole ground, so as to exhibit an ugly appearance: it is the same with my other horse-hoed experiments on pease. One sees the ground through them. All three were hooked the 21st of August. Products of the broad-cast, four bushels and one peck. Of the equally distant rows, five bushels. Of the horse-hoed, two bushels three pecks.

Account of the HORSE-HOED ROOD.

EXPENCES.							£.	s.	d.
Three ploughings,	-	-	-	-	-	-	0	0	9
Three harrowings,	-	-	-	-	-	-	0	0	0 ¹ / ₂
Drilling	-	-	-	-	-	-	0	0	0 ³ / ₄
Seed,	-	-	-	-	-	-	0	2	0
Three horse-hoeings,	-	-	-	-	-	-	0	0	6
Two hand-hoeings	-	-	-	-	-	-	0	3	0
Hooking,	-	-	-	-	-	-	0	0	4
Harvesting,	-	-	-	-	-	-	0	0	8
Threshing,	-	-	-	-	-	-	0	0	6
							0	7	10 ¹ / ₄
Rent, &c.	-	-	-	-	-	-	0	4	3
							0	12	1 ¹ / ₄

PRO-

PRODUCE.

						£.	s.	d.
2 Bushels 3 pecks at 30 s.	-	-	-	-	-	0	10	3 $\frac{3}{4}$
Loss,	-	-	-	-	-	0	1	9 $\frac{1}{2}$
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	0	9
Harrowing,	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Drilling,	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Horse-hoeing,	-	-	-	-	-	0	0	3 $\frac{3}{4}$
Carting in harvest,	-	-	-	-	-	0	0	0 $\frac{3}{4}$
						0	1	3 $\frac{1}{2}$
Total loss 12 s. 4 d. <i>per</i> acre,	-	-	-	-	-	0	3	1

Account of the EQUALLY DISTANT Rows.

EXPENCES.

						£.	s.	d.
Three ploughings,	-	-	-	-	-	0	0	9
Three harrowings,	-	-	-	-	-	0	0	0 $\frac{1}{2}$
Drilling,	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Seed,	-	-	-	-	-	0	3	0
Two hand-hoeings,	-	-	-	-	-	0	2	6
One hand-weeding,	-	-	-	-	-	0	0	6
Hooking,	-	-	-	-	-	0	0	7 $\frac{1}{2}$
Harvesting,	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	0	1	0
						0	10	0 $\frac{1}{2}$
Rent, &c.	-	-	-	-	-	0	4	6
						0	14	6 $\frac{1}{2}$

PRODUCE.

5 Bushels at 30 s.	-	-	-	-	-	1	2	6
Expences,	-	-	-	-	-	0	14	6 $\frac{1}{2}$
Profit,	-	-	-	-	-	0	7	11 $\frac{1}{2}$

Ploughing,

	£.	s.	d.
Ploughing, - - - - -	0	0	9
Harrowing, - - - - -	0	0	1 $\frac{1}{2}$
Drilling, - - - - -	0	0	0 $\frac{1}{2}$
Carting in harvest, - - - - -	0	0	0 $\frac{3}{4}$
	<hr/>		
	0	0	11 $\frac{1}{4}$
Clear profit, 1 l. 7 s. 11 d. <i>per acre</i>	0	6	11 $\frac{1}{4}$
	<hr/>		

Account of the BROAD-CAST.

EXPENCES.

	£.	s.	d.
Three ploughings, - - - - -	0	0	9
Three harrowings, - - - - -	0	0	0 $\frac{1}{2}$
Seed, - - - - -	0	3	0
Hand-hoeing, - - - - -	0	2	0
Hand Weeding, - - - - -	0	0	6
Hooking, - - - - -	0	0	7 $\frac{1}{2}$
Harvesting, - - - - -	0	0	6
Threshing, - - - - -	0	0	9
	<hr/>		
	0	8	2
Rent, &c. - - - - -	0	4	3
	<hr/>		
	0	12	5

PRODUCE.

4 Bushels 1 peck at 30 s.	0	15	11
Expences, - - - - -	0	12	5
	<hr/>		
Profit, - - - - -	0	3	6

	£.	s.	d.
Ploughing, - - - - -	0	0	9
Harrowing, - - - - -	0	0	1 $\frac{1}{2}$
Carting in harvest, - - - - -	0	0	0 $\frac{3}{4}$
	<hr/>		
	0	0	11 $\frac{1}{4}$
Clear profit 10 s. 3 d. <i>per acre</i> ,	0	2	6 $\frac{1}{4}$
	<hr/>		

Profit

	£.	s.	d.
Profit by the equally distant rows,	1	7	11
Ditto by the broadcast,	0	10	3
Superiority of the former,	0	17	8
Profit by the equally distant rows,	1	7	11
Loss by the horse-hoed,	0	12	4
Superiority of the former,	2	0	3
Profit by broadcast,	0	10	3
Loss by the horse-hoed,	0	12	4
Former superior by	1	2	7

OBSERVATIONS.

This comparison is very decisive: the horse-hoed crop is evidently much inferior to both the others: but the equally distant drilled is superior to all. It exceeds the broadcast by above seventeen shillings an acre, clear profit, or a year's rent of the land. This product must be owing to the tillage bestowed on the rows, having a greater effect than that given to the broadcast, which is very probable, considering how much handier it is to hoe and clean rows, than promiscuous crops. And a point of very great importance in favour of this mode of drilling, is the narrowness of the spaces admitting the pease, after a proper culture while young, to join and cover the ground like a broadcast crop, which is following the natural disposition and tendency of the plant: whereas in horse-hoed crops this junction is totally prevented. From the most accurate attention I can give to horse-hoeing of pease, I cannot conceive the practice will ever answer.

EXPERIMENT N^o 4.

Culture, expences, and produce of twenty perches, field T, 1765.

CULTURE.

This piece was cropped with drilled barley in 1764, and was ploughed up in October of that year. Stirred for the second time in March. In the second week in April gave it the third earth, throwing half of it on to five feet ridges, and leaving the other flat. The last week of the same month

month ploughed and sowed the latter with three quarters of a peck of white boiling pease, harrowing the ground after: at the same time arched up the five feet ridges, and harrowing them thrice, drilled three rows, one foot asunder, on the top of each, with half a peck of the same pease.

The first week in June hand-hoed the drilled pease, and in a few days after horse-hoed them. Before the end of the month another horse-hoeing, and hand-hoeing were given, and also a hand-weeding: after this, the pease spread so much and fell in so many places into the intervals, that it was adviseable to desist from any further tillage: but a thorough hand-weeding was given, which served to keep the crop quite clean, for the dryness of the season had not permitted many weeds to grow. The beginning of August cut them. Product of the drilled three pecks one quarter; of the broadcast one bushel and a peck. Proportions *per acre* as follow.

Account of the DRILLED.

EXPENCES.

							£	s.	d.
Four ploughings,	-	-	-	-	-	-	0	4	0
Three harrowings,	-	-	-	-	-	-	0	0	6
Water-furrowing,	-	-	-	-	-	-	0	1	0
Seed,	-	-	-	-	-	-	0	8	0
Drilling,	-	-	-	-	-	-	0	0	3
Two horse-hoeings,	-	-	-	-	-	-	0	1	4
Two hand-hoeings,	-	-	-	-	-	-	0	8	0
One weeding,	-	-	-	-	-	-	0	2	0
Hooking,	-	-	-	-	-	-	0	2	0
Harvesting,	-	-	-	-	-	-	0	1	3
Threshing,	-	-	-	-	-	-	0	2	6
							1	10	10
Rent, &c.	-	-	-	-	-	-	0	17	0
							2	7	10

PRODUCE.

15 Bushels at 32 s.	-	-	-	-	-	-	3	0	0
Expences,	-	-	-	-	-	-	2	7	10
Profit,	-	-	-	-	-	-	0	12	2

Ploughing,

Chap. I.

P E A S E.

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	£.	s.	d.	o	12	2
Ploughing,	0	4	0			
Harrowing,	0	0	6 $\frac{1}{4}$			
Drilling,	0	0	3			
Horfe-hoeing,	0	2	0			
Carting in harvest,	0	0	6 $\frac{1}{2}$			
				0	7	4 $\frac{1}{4}$
Clear profit,				0	4	9 $\frac{1}{4}$

B R O A D C A S T.

E X P E N C E S.

	£.	s.	d.
Ploughing,	0	4	0
Harrowing,	0	0	6
Water-furrowing,	0	0	8
Seed,	0	12	0
Sowing,	0	0	3
Hooking,	0	2	6
Harvesting,	0	1	6
Threshing,	0	3	4
	1	4	9
Rent, &c.	0	17	0
	2	1	9

P R O D U C E.

20 Bushels at 32 s.	4	0	0
Expences,	2	1	9
Profit,	1	18	3

	£.	s.	d.
Ploughing,	0	4	0
Harrowing,	0	0	6 $\frac{1}{4}$
Carting in harvest,	0	0	6 $\frac{1}{2}$
	0	5	1 $\frac{1}{4}$
Clear profit,	1	13	1 $\frac{3}{4}$
Clear profit of the drilled,	0	4	9 $\frac{3}{4}$
Superiority of the former,	1	8	4

OBSERVATIONS.

This broadcast crop has proved one of the best I ever had; and the horse-hoed one is also much better than common with pease: but the superiority of the common method is very great; which shews, that in whatever variations we view the comparison, the result will be the same. Large horse-hoed crops of pease may be gained; but if broadcast ones join them, that have received the same culture and attention, they will most assuredly much exceed them. In this experiment a man expends 10s. more upon the horse-hoed acre than upon the broadcast one; and yet the latter exceeds the former in clear profit by 28s.

EXPERIMENT N° 5.

Culture, expences, and produce of thirty perches, field M*, 1765.

CULTURE.

Yielded broadcast turneps in 1764, which were drawn for cattle in January. The first week in March gave it the first ploughing, and the second the end of the same month, throwing one-third of it into five feet ridges, and leaving the other two-thirds flat. The middle of April gave the seed-earth; when the ridges were arched up, harrowed, and drilled in three rows, one foot asunder, with a quarter of a peck of white pease: the other thirds ploughed again on the flat; harrowed in a peck of seed, broadcast on one, and drilled the other, in equally distant rows, one foot asunder, with three quarters of a peck of the same.

June 5th horse-hoed the ridges, turning a furrow *from* the rows, and throwing up a ridge in the middle of each interval; then hand-hoed the rows, and also the equally distant ones. The 19th gave the second horse-hoeing; and I desisted from any more, on account of damaging the pease which fell in the intervals: this horse-hoeing was not performed without doing some mischief. In a few days after repeated the hand-hoeing of both the ridges, and the equally distant rows, which concluded the culture on these crops. The extreme dry weather which prevailed so greatly this summer, rendered more attention of this sort unnecessary. Hooked all three crops the first week in August. Product of the horse-hoed three pecks. Of the equally distant rows, one bushel and a peck. Of the broadcast, one bushel.

Account

Account of the HORSE-HOED.

EXPENSES.

								£.	s.	d.
Three ploughings,	-	-	-	-	-	-	-	o	3	o
Harrowing,	-	-	-	-	-	-	-	o	o	6
Seed,	-	-	-	-	-	-	-	o	4	o
Drilling,	-	-	-	-	-	-	-	o	o	3
Two horse-hoeings,	-	-	-	-	-	-	-	o	I	4
Two hand-hoeings,	-	-	-	-	-	-	-	o	6	6
Cutting,	-	-	-	-	-	-	-	o	I	6
Harvesting,	-	-	-	-	-	-	-	o	I	6
Threshing,	-	-	-	-	-	-	-	o	2	o
								<hr/>		
Rent, &c.	-	-	-	-	-	-	-	I	o	7
								o	17	o
								<hr/>		
								I	17	7

PRODUCE.

12 bushels at 32 s.	-	-	-	-	2	8	0
Expences,	-	-	-	-	1	17	7
Profit,	-	-	-	-	0	10	5

					£.	s.	d.	
Ploughing,	-	-	-	-	0	3	0	
Harrowing,	-	-	-	-	0	0	6 $\frac{3}{4}$	
Drilling,	-	-	-	-	0	0	3	
Horse-hoeing,	-	-	-	-	0	2	0	
Carting in harvest,		-	-	-	0	0	6 $\frac{1}{2}$	
								0 6 4 $\frac{1}{4}$
Clear profit,	-	-	-	-	-	-		0 4 $\frac{3}{4}$

Account

EXPENCES.

	s.	d.	c.
Three ploughings,	-	-	-
Harrowing,	-	-	-
Seed,	-	-	-
Drilling,	-	-	-
Two hand-hoeings,	-	-	-
Hooking,	-	-	-
Harvesting,	-	-	-
Threshing,	-	-	-
Rent,	-	-	-
	<hr/>		
	1	15	4
	0	17	0
	<hr/>		
	2	12	4

PRODUCE.

20 Bushels at 32 s.	-	-	-	-	-	4	0	0
Expences,	-	-	-	-	-	2	12	4
Profit,	-	-	-	-	-	1	7	8

					£.	s.	d.			
Ploughing,	-	-	-	-	0	3	0			
Harrowing,	-	-	-	-	0	0	6 $\frac{3}{4}$			
Drilling,	-	-	-	-	0	0	5			
Carting in harvest,	-	-	-	-	0	0	6 $\frac{1}{2}$			
								0	4	6 $\frac{1}{4}$
Clear profit,	-	-	-	-	-	-		1	3	1 $\frac{3}{4}$

Account of the BROADCAST.

EXPENCES.

[illegible]

							£.	s.	d.
Sowing,	-	-	-	-	-	-	0	0	3
Cutting,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	2	0
Threshing,	-	-	-	-	-	-	0	2	8
								6	11
Rent,	-	-	-	-	-	-	0	17	0
								2	3

PRODUCE.

16 Bushels at 32s.	-	-	-	-	-	-	3	4	0
Expences,	-	-	-	-	-	-	2	3	11
Profit,	-	-	-	-	-	-	1	0	1

							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	3	0
Harrowing,	-	-	-	-	-	-	0	0	6 $\frac{3}{4}$
Carting in harvest,	-	-	-	-	-	-	0	0	6 $\frac{1}{2}$
								4	1 $\frac{1}{4}$
Clear profit,	-	-	-	-	-	-	0	15	11 $\frac{3}{4}$

COMPARISON.

Profit by the equally distant rows,	-	-	-	-	-	-	1	3	1 $\frac{1}{4}$
Ditto by the broadcast,	-	-	-	-	-	-	0	15	11 $\frac{3}{4}$
Former superior by	-	-	-	-	-	-	0	7	2
Profit by the equally distant rows,	-	-	-	-	-	-	1	3	1 $\frac{3}{4}$
Ditto by the horse-hoed,	-	-	-	-	-	-	0	4	0 $\frac{3}{4}$
Former superior by	-	-	-	-	-	-	0	19	1
Profit by the broadcast,	-	-	-	-	-	-	0	15	11 $\frac{3}{4}$
Ditto by the horse-hoed,	-	-	-	-	-	-	0	4	0 $\frac{3}{4}$
Former superior by	-	-	-	-	-	-	0	11	11

OBSERVATIONS.

OBSERVATIONS.

This comparison is very clearly in favour of the equally distant rows, and proves that method to be far superior to any other culture. Indeed it appears to be extremely well adapted to the nature of pease: for hoeing while they are young, is of great use to them; but any culture after their tendrils join, does more mischief than good. The hand-hoeing between one foot rows is a very good and effectual operation, and especially given when the young pease are from five to seven inches high; well done, it gives such a check to the weeds, that they are by no means able afterwards to make any head against the crop, which then smothers and strangles them. Here lies the advantage of this culture over the broadcast sowing: for although the latter can be hand-hoed to advantage while young, yet can it never be equally done with the same operation between rows, unless the crop is much under-fed.

The horse-hoed in this trial, as in all the preceding, is much inferior to the other modes. This culture is absolutely against the nature of the plant, which loves to join and thicken upon the ground, besides the damage it receives in the horse-hoeing. If such crops were staked, as in gardens, there can be no doubt but the produce would be vastly greater, as the twining round the sticks answers the purpose of joining, and at the same time keeps the plants out of all danger from both horses and men.

EXPERIMENT N° 6.

Culture, expences, and produce of thirty perches, field T, 1766.

CULTURE.

In October 1765 ploughed a rood of potatoe-land on to the ridge for the winter. March 20th 1766 ploughed it flat. The 21st harrowed it twice. April 18th ploughed thirty perches of it into three parts, and harrowed them twice; one flat, which was drilled in equally distant rows, one foot asunder, with three quarters of a peck of white boiling pease; another in ridges, five feet broad, drilled each with three rows of the same pease, using half a peck; the last third, sowed broadcast with one peck. The first week in June horse-hoed the ridges, and afterwards hand-hoed all three. June 17th horse-hoed the ridges again, and hand-hoed them and the equally distant rows. This is all the culture the growth

growth of the pease would allow me to give, without damaging them. Cut them all three the second week in August. The produce was as follows: Of the horse-hoed two pecks. Of the equally distant rows one bushel. Of the broadcast three pecks and a half.

Account of the HORSE-HOED.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	6
Water-furrowing,	0	0	10
Seed,	0	7	6
Drilling,	0	0	3
Two horse-hoeings,	0	1	4
Two hand-hoeings,	0	6	9
Cutting,	0	1	3
Harvesting,	0	1	9
Threshing,	0	1	6
	<hr/>		
	1	4	8
Rent,	0	17	0
	<hr/>		
	2	1	8

PRODUCE.

1 Quarter,	1	10	0
Loss,	0	11	8

	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	1	1 $\frac{1}{2}$
Drilling,	0	0	3
Horse-hoeing,	0	2	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
	<hr/>		
	0	11	1 $\frac{1}{4}$
Total loss,	1	2	9 $\frac{1}{4}$

Account of the EQUALLY DISTANT Rows.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	6
Water-furrowing,	0	0	6
Seed,	0	11	3
Drilling,	0	0	6
Two hand-hoeings,	0	10	0
Cutting,	0	2	6
Harvesting,	0	2	6
Threshing,	0	3	0
	<hr/>		
Rent, &c.	1	13	0
	0	17	0
	<hr/>		
	2	10	9

PRODUCE.

2 Quarters,	3	0	0
Expences,	2	10	9
	<hr/>		
Profit,	0	9	3

	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	1	1 $\frac{1}{2}$
Drilling,	0	0	5
Carting in harvest,	0	0	6 $\frac{1}{2}$
	<hr/>		
The above profit,	0	9	3 $\frac{1}{4}$
	0	9	3
	<hr/>		
Loss,	0	0	0 $\frac{1}{4}$

Account of the BROADCAST.

EXPENCES.

	£.	s.	d.
Three ploughings,	0	3	0
Harrowing,	0	0	6
Water-furrowing,	0	0	6
	<hr/>		
Seed,			

	£.	s.	d.
Seed,	0	15	0
Sowing,	0	0	3
One hand-hoeing,	0	5	6
Cutting,	0	2	6
Harvesting,	0	2	6
Threshing,	0	2	7 $\frac{1}{2}$

Rent, &c.	1	12	4 $\frac{1}{2}$
	0	17	0
	2	9	4 $\frac{1}{2}$

PRODUCE.

14 Bushels at 30s.	2	12	6
Expences,	2	9	4 $\frac{1}{2}$
Profit,	0	3	1 $\frac{1}{2}$

	£.	s.	d.
Ploughing,	0	7	2 $\frac{1}{4}$
Harrowing,	0	1	1 $\frac{1}{2}$
Carting in harvest,	0	0	6 $\frac{1}{2}$
	0	8	10 $\frac{1}{4}$
The above profit,	0	3	1 $\frac{1}{2}$
Loss,	0	5	8 $\frac{3}{4}$

COMPARISON.

Loss by the horse-hoed,	1	2	9 $\frac{1}{4}$
Ditto by the broadcast,	0	5	8 $\frac{3}{4}$
Superiority of the latter,	0	17	0 $\frac{1}{2}$
Loss by the horse-hoed,	1	2	9 $\frac{1}{4}$
Ditto by the equally distant rows,	0	0	0 $\frac{1}{4}$
Superiority of the latter,	1	2	9
Loss by the broadcast,	0	5	8 $\frac{3}{4}$
Ditto by the equally distant rows,	0	0	0 $\frac{1}{4}$
Latter superior by	0	5	8 $\frac{1}{2}$

OBSERVATIONS.

None of these crops are considerable; which I attribute to the extreme wetness of the season. In such wet years pease are very apt to run to straw, and corn but indifferently: however, as all three methods were equal in this respect, the comparison remains the same. The drilling in equally distant rows, at one foot asunder, maintains a great superiority over the other methods; which is a strong confirmation of the result of the comparison in former years. So uniform an effect cannot but be occasioned by a real superiority: as to horse-hoeing, the ill success of it is the same in all seasons; no attention of which I am master, can make it nearly equal to the broadcast, much less to the equally distant rows.—1 l. 2 s. 9 d. superiority of the latter, is a very considerable difference, and calls for some attention from those who will persist in unprofitable methods.

EXPERIMENT N° 7.

Culture, expences, and produce of thirty perches, field M*, 1767.

CULTURE.

This piece yielded cabbages in 1766, which were cut for cattle in December, and the land, soon after, ploughed on to the ridge. The beginning of March stirred it again, and gave it the third earth the 17th, throwing one-third of it on to five feet ridges, and leaving two-thirds flat. I should have sowed them the 18th, but rain prevented me. Ploughed again the first week in April, arching up the five feet ridges, and stirring the rest flat as before. Drilled the first with three rows on each ridge, one foot asunder, using three quarts of white pease. Another third, drilled in equally distant rows, one foot asunder, using half a peck, and harrowed in three quarters of a peck broadcast upon the remaining third. The following season was so uncommonly wet, that all kinds of tillage was very irregularly performed, even upon our gravelly loams. The business of horse-hoeing was in general executed whenever the time was driest. These ridges received two horse-hoeings, one hand-hoeing, and a weeding. The equally distant rows were hand-hoed twice, and the broadcast once weeded. Cut them the middle of August. Produce of the horse-hoed, two pecks and three quarters; of the equally distant rows, one bushel and a quarter of a peck; of the broadcast, three pecks and a half.

Account

Account of the HORSE-HOED.

EXPENCES.

	£.	s.	d.
Four ploughings,	0	4	0
Harrowing,	0	0	6
Seed,	0	5	7½
Drilling,	0	0	3½
Two horse-hoeings,	0	1	4
One hand-hoeing,	0	3	0
One weeding,	0	1	6
Cutting,	0	1	9
Harvesting,	0	2	0
Threshing,	0	2	2
	<hr/>		
	1	2	2
Rent, &c.	0	17	0
	<hr/>		
	1	19	2

PRODUCE.

11 Bushels at 28 s.							1	18	6
							<hr/>		
Loss							0	0	8
						£.	s.	d.	
Ploughing,						0	9	9	
Harrowing,						0	1	1½	
Drilling,						0	0	3	
Horse-hoeing,						0	2	0	
Carting in harvest,						0	0	6½	
						<hr/>			
							0	13	8
						<hr/>			
Total loss,							0	14	4
						<hr/>			

Account of the EQUALLY DISTANT Rows.

EXPENCES.

	£.	s.	d.
Four ploughings,	0	4	0
Harrowing,	0	0	6
Seed,			

	£.	s.	d.
Seed, - - - - -	0	7	6
Drilling, - - - - -	0	0	6
Two hand-hoeings, - - - - -	0	11	0
Cutting, - - - - -	0	2	6
Harvesting, - - - - -	0	2	6
Threshing, - - - - -	0	3	0
	<hr/>		
Rent, &c. - - - - -	1	11	6
	0	17	0
	<hr/>		
	2	8	6
	<hr/>		

P R O D U C E.

2 Quarters 1 Bushel at 28 s. - - - - -	2	17	6
Expences, - - - - -	2	8	6
	<hr/>		
Profit, - - - - -	0	9	0
	<hr/>		

	£.	s.	d.
Ploughing, - - - - -	0	9	9
Harrowing, - - - - -	0	1	1½
Drilling, - - - - -	0	0	5
Carting, - - - - -	0	0	6½
	<hr/>		
The above profit, - - - - -	0	11	10
	<hr/>		
Loss, - - - - -	0	9	0
	<hr/>		
	0	2	10
	<hr/>		

Account of the B R O A D C A S T.

E X P E N C E S.

	£.	s.	d.
Four ploughings, - - - - -	0	4	0
Harrowing, - - - - -	0	0	6
Seed, - - - - -	0	11	3
Sowing, - - - - -	0	0	3
Weeding, - - - - -	0	1	3
Cutting, - - - - -	0	2	6
	<hr/>		
Harvesting,			

								£.	s.	d.
Harvesting,	-	-	-	-	-	-	-	0	2	6
Threshing,	-	-	-	-	-	-	-	0	2	6
								1	4	9
Rent,	-	-	-	-	-	-	-	0	17	0
								2	1	9

PRODUCE.

14 Bushels at 28 s.	-	-	-	-	-	-	-	2	9	0
Expences,	-	-	-	-	-	-	-	2	1	9
Profit,	-	-	-	-	-	-	-	0	7	3

£. s. d.

Ploughing,	-	-	-	-	-	-	-	0	9	9
Harrowing,	-	-	-	-	-	-	-	0	1	1 $\frac{1}{2}$
Carting in harvest,	-	-	-	-	-	-	-	0	0	6 $\frac{1}{2}$
								0	11	5
The above profit,	-	-	-	-	-	-	-	0	7	3
Loss.	-	-	-	-	-	-	-	0	4	2

COMPARISON.

£. s. d.

Loss by the horse-hoed,	-	-	-	-	-	-	-	0	14	4
Ditto by the broadcast,	-	-	-	-	-	-	-	0	4	2
Latter superior by	-	-	-	-	-	-	-	0	10	2
Loss by the broadcast,	-	-	-	-	-	-	-	0	4	2
Ditto by the equally distant rows,	-	-	-	-	-	-	-	0	2	10
Latter superior by	-	-	-	-	-	-	-	0	1	4
Loss by the horse-hoed,	-	-	-	-	-	-	-	0	14	4
Ditto by the equally distant rows,	-	-	-	-	-	-	-	0	10	0
Latter superior by,	-	-	-	-	-	-	-	0	4	4

OBSERVATIONS.

OBSERVATIONS.

This trial turns out like all the rest: the equally distant rows at one foot, the best; the broadcast the next; and the horse-hoed the worst: and the uncommon similitude of the event gives one great reason to suppose the comparison decisive: the poorness of the crops is owing to the wetness of the season, which was remarkably unfavourable to all the productions of the earth, and particularly so to those of a tender nature: this is in numerous instances fully accounting for the smallness of crops in general: but when we speak of comparative ones, the circumstance does not in the least derogate from their authority: the point of *comparison* is seen as well when all the crops are losing ones, as if they were ever so beneficial.

GENERAL OBSERVATIONS ON THIS COMPARISON.

These trials for comparing different modes of cultivating pease, are more decisive than common in husbandry: whoever makes it his business to try and register experiments, will frequently find the ballance of a farming account so small, as to render it somewhat difficult to pronounce upon which side it lies: in such cases the experimenter has been for some years employed, at least, to no *pleasing* purpose: but on the contrary, when the result of many separate experiments is similar, the ballance upon the whole will be very great: sufficient to determine the point at once. The following review of the preceding experiments will shew, that this is precisely the case at present.

HORSE-HOED CROPS.

EXPENCES.

							£.	s.	d.
In experiment N ^o 1.	-	-	-	-	-	-	2	13	1
2.	-	-	-	-	-	-	4	6	1
3.	-	-	-	-	-	-	2	13	5
4.	-	-	-	-	-	-	2	15	2 $\frac{1}{4}$
5.	-	-	-	-	-	-	2	3	11 $\frac{1}{4}$
6.	-	-	-	-	-	-	2	12	9 $\frac{1}{4}$
7.	-	-	-	-	-	-	2	12	10
Total,	-	-	-	-	-	-	19	17	3 $\frac{3}{4}$
Average, 2l. 16s. 9d.									

PRO-

PRODUCE.

Experiment N ^o	1.	2.	3.	4.	5.	6.	7.	Q.	B.	P.
	-	-	-	-	-	-	-	1	4	2
	-	-	-	-	-	-	-	1	4	0
	-	-	-	-	-	-	-	1	3	0
	-	-	-	-	-	-	-	1	7	0
	-	-	-	-	-	-	-	1	4	0
	-	-	-	-	-	-	-	1	0	0
	-	-	-	-	-	-	-	1	3	0
Total,	-	-	-	-	-	-	-	10	1	2

Average, 1 quarter, 3 bushels, 2 pecks.

PROFIT AND LOSS.

N ^o	1. Loss,	2.	3.	4.	5.	6.	7.	£.	s.	d.
	-	-	-	-	-	-	-	0	3	1
	-	-	-	-	-	-	-	0	9	6 $\frac{1}{4}$
	-	-	-	-	-	-	-	0	12	4
	-	-	-	-	-	-	-	1	2	9 $\frac{1}{2}$
	-	-	-	-	-	-	-	0	14	4
	-	-	-	-	-	-	-	3	2	0 $\frac{1}{2}$
N ^o 4. Profit,	-	-	-	-	-	-	-	0	4	9 $\frac{3}{4}$
5.	-	-	-	-	-	-	-	0	4	0 $\frac{3}{4}$
	-	-	-	-	-	-	-	0	8	10 $\frac{1}{2}$
Loss,	-	-	-	-	-	-	-	2	13	2

Average, 7 s. 7 d.

EQUALLY DISTANT ROWS.

EXPENCES.

N ^o	3.	5.	6.	7.	£.	s.	d.
	-	-	-	-	3	2	1
	-	-	-	-	2	16	10 $\frac{1}{2}$
	-	-	-	-	3	0	0 $\frac{1}{4}$
	-	-	-	-	3	0	4
	-	-	-	-	11	19	3 $\frac{3}{4}$

Average 2 l. 19 s. 9 d.

P R O D U C T.

Experiment N°	3.	5.	6.	7.	Q. B. P.
	-	-	-	-	2 4 0
	-	-	-	-	2 4 0
	-	-	-	-	2 0 0
	-	-	-	-	2 4 0
					<hr/> 9 4 0

Average, 2 quarters 3 bushels.

P R O F I T and L O S S.

Experiment N°	3. Profit,	5.	6. Loss,	7.	£. s. d.
	-	-	-	-	1 7 11
	-	-	-	-	1 3 1 $\frac{3}{4}$
					<hr/> 2 11 0 $\frac{3}{4}$
					£. s. d.
					0 0 0 $\frac{1}{4}$
					0 2 10
					<hr/> 0 2 10 $\frac{1}{4}$
Profit,	-	-	-	-	2 8 2 $\frac{1}{2}$

Average, 12 s. 0 $\frac{1}{2}$ d.

B R O A D C A S T.

E X P E N C E S.

Experiment N°	1.	2.	3.	4.	5.	6.	7.	Total	£. s. d.
	-	-	-	-	-	-	-	-	2 7 4
	-	-	-	-	-	-	-	-	4 1 10
	-	-	-	-	-	-	-	-	2 13 5
	-	-	-	-	-	-	-	-	2 6 10 $\frac{1}{4}$
	-	-	-	-	-	-	-	-	2 8 0 $\frac{1}{4}$
	-	-	-	-	-	-	-	-	2 18 2 $\frac{3}{4}$
	-	-	-	-	-	-	-	-	2 13 2
									<hr/> 19 17 10 $\frac{1}{4}$

Average, 2l. 16 s. 10 d.

PRO-

PRODUCT.

							Q.	B.	P.
Experiment N° 1.	-	-	-	-	-	-	2	3	0
2.	-	-	-	-	-	-	3	0	0
3.	-	-	-	-	-	-	2	1	0
4.	-	-	-	-	-	-	2	4	0
5.	-	-	-	-	-	-	2	0	0
6.	-	-	-	-	-	-	1	6	0
7.	-	-	-	-	-	-	1	6	0
Total,	-	-	-	-	-	-	15	4	0

Average, 2 quarters 1 bushel 2 pecks.

PROFIT and LOSS.

							£.	s.	d.
Experiment N° 1. Profit,	-	-	-	-	-	-	1	8	8
2.	-	-	-	-	-	-	0	14	2
3.	-	-	-	-	-	-	0	10	3
4.	-	-	-	-	-	-	1	13	1 $\frac{3}{4}$
5.	-	-	-	-	-	-	0	15	11 $\frac{3}{4}$
							5	2	2 $\frac{1}{2}$
6. Loss,	-	-	-	-	-	-	0	5	8 $\frac{3}{4}$
7.	-	-	-	-	-	-	0	4	2
							0	9	10 $\frac{3}{4}$
Profit,	-	-	-	-	-	-	4	12	3 $\frac{3}{4}$

Average, 13 s. 2 $\frac{1}{4}$ d.

COMPARISON.

EXPENCES.

							£.	s.	d.
Of equally distant rows,	-	-	-	-	-	-	2	19	9 $\frac{3}{4}$
Of broadcast,	-	-	-	-	-	-	2	16	10
Excess of the former,	-	-	-	-	-	-	0	2	11 $\frac{3}{4}$

					£. s. d.
Of equally distant rows,	-	-	-	-	2 19 9 $\frac{1}{4}$
Of horse-hoed,	-	-	-	-	2 16 9
Excess of the former,	-	-	-	-	0 3 0 $\frac{1}{4}$
Of broadcast,	-	-	-	-	2 16 10
Of horse-hoed,	-	-	-	-	2 16 9
Excess of the former,	-	-	-	-	0 0 1

From hence we find that one benefit of the horse-hoeing culture, performed in the preceding manner, is cheapness; this I am sensible will surprize many of my readers, who think that horse-hoeing is of all other modes the most costly: the contrary is however extremely evident: but here it is necessary to offer two remarks. *First*; this culture of pease has been found profitably to admit of but two horse-hoeings; nor have the hand-hoeings and weedings been equal to those of many other crops: this has lowered the expences much. *Secondly*; these accounts no more than any of the rest, contain the *real* expence of drilling. My expences even after I had a drill plough ran so extremely high that I thought it very unfair to tax all the experiments with an expence which resulted merely from the evils of *one* machine: such expence is not in total to be charged to the new husbandry, unless all the drilled ploughs extant are no better than Mr. Randal's: this is an important point, but beyond my power to prove; but that the expence of drilling with indifferent instruments will be much higher than I have charged it, is most certain, yet that excess not being within a certain calculation, cannot be charged to the account, but must every where be left to the reader's idea. These two circumstances raise the expences of drilling higher than they are charged in these accounts.

P R O D U C T.

					Q. B. P.
Of the equally distant rows,	-	-	-	-	2 3 0
Of the broadcast,	-	-	-	-	2 1 2
Superiority of the former,	-	-	-	-	0 1 2

					Q.	B.	P.
Of qually distant rows,	-	-	-	-	2	3	0
Of the horse-hoed,	-	-	-	-	1	3	2
Superiority of the former,	-	-	-	-	0	7	2
Of the broadcast,	-	-	-	-	2	1	2
Of the horse hoed,	-	-	-	-	1	3	2
Superiority of the former,	-	-	-	-	0	6	0

The equally distant rows in this comparison have a very great advantage; which proves that this culture is more beneficial for pease than either the horse-hoeing or the broadcast: whatever mode yields the greatest produce, is certainly the best adapted to the nature of the vegetable; tho' in some cases the expences may render others more profitable: this shews the necessity of considering *produce* independantly of *profit*: for when the latter is too much lessened by expences, the former should be particularly considered; to discover if a reduction of the expences can be effected without lessening the amount of the produce.

The equally distant rows being superior to the common method of broadcast sowing, ought to convince such cultivators as are particularly attached to the *old* husbandry, that a *new* culture *may* be more beneficial than an old one: no one can have a better comparative opinion of the common husbandry than myself; but I cannot hesitate a moment at preferring in the present case, the drill husbandry, which is so manifestly superior to the common. I have remarked more than once, that this culture was particularly suited to pease: in rejecting that part of horse-hoeing which is palpably detrimental to the plants; and in possessing advantages which the common method cannot possibly enjoy; for by horse-hoeing (especially if that operation is performed three or four times) the branches of the pease are much trodden under foot; an injury which pease will not bear: and in the broadcast method the hand-hoeing is very weakly performed, unless the crop is sowed so thin as to hazard the produce on that account. In the equally distant rows, both these and several other evils are avoided. It is I presume owing to these circumstances that the equally distant drilling is found so superior to both the other methods.

P R O F I T and L O S S.

					£.	s.	d.
Profit by broadcast,	-	-	-	-	0	13	2 $\frac{1}{4}$
Profit by equally distant rows	-	-	-	-	0	12	0 $\frac{1}{2}$
Superiority of the former,	-	-	-	-	0	1	1 $\frac{3}{4}$
Profit by broadcast,	-	-	-	-	0	13	2 $\frac{1}{4}$
Loss by horse-hoed,	-	-	-	-	0	7	7
Superiority of the former,	-	-	-	-	1	0	9 $\frac{1}{4}$
Profit by the equally distant rows,	-	-	-	-	0	12	0 $\frac{1}{2}$
Loss by horse-hoed,	-	-	-	-	0	7	7
Superiority of the former,	-	-	-	-	0	19	7 $\frac{1}{2}$

This comparison is in one instance very decisive, and in another somewhat dubious: the inferiority of the horse-hoed crops is such, that it admits no doubt; but the equality or nearly such of the equally distant rows, and the broadcast, will leave many doubtful which method is most beneficial: the product of the drilled exceeds the common husbandry, which shews that the nature of the vegetable is more affected to one than the other, but that the expences of that mode being rather higher than those of the broadcast, is a circumstance which more than ballances the superiority of product.

If opinion may be allowed in a point wherein experiment is so nearly equal, I should give in favour of the drilled, *provided the expences attending a drill plough did not exceed those here minuted*; for the rows yielding the larger crop, and coming so very near the profit of the broadcast, after paying the expence of much hand-hoeing, are circumstances, and give great reason for supposing, the land after one method in a much superior state to what it is after the other: for a hoed crop that comes within a shilling of profit to an unhoed one, has many advantages to ballance that shilling.

This point of the state of the soil is much urged in favour of the horse-hoeing crops, by many writers, but I shall venture to differ from them in opinion respecting pease: My crops twice horse-hoed left the soil in a much worse state than either the broadcast or the equally distant rows: this is the fact; nor do I think it difficult to account for. It is well known in common husbandry that a crop of pease large enough to smother the weeds

weeds (no uncommon thing) prepares for a crop of corn almost as well as a fallow; and upon some soils even better. This is owing to the thickness of the shade afforded by full crops; which so mellows the earth and leaves the surface in so putrid a state that it breaks up under the plough like well-fallowed land: all this effect is lost in horse-hoeing: when pease of a nature to admit full tillage of this sort, that is, four horse and two or three hand-hoeings, yet it would be the same: intervals wide enough for horse-hoeing, render the crop so thin upon the ground as to preclude all advantage of thick shade. But how much more must this be the case while only two horse-hoeings can be given, and the last of them hardly without damage. The weakness of the stalks of this plant is such that it cannot support itself, but falls to the ground before it is half or three-fourths grown; and accident, by which the direction of its descent is governed, may as well lay it in the intervals, as on the beds themselves; so that the horse-hoeings after it falls in this manner, cannot be performed without much damage to the crop: hence the poor state of the soil after horse-hoed pease: it is deprived of the shade of thicker crops, and in return cannot enjoy the benefit of proper tillage.

I must be allowed to remark that this reasoning *appears* to me applicable to all soils: but I shall by no means venture to assert that *it is* so: we cannot keep too free in agriculture of *general* assertions, from *particular* instances.

S E C T. IV.

Of the Quantity of S E E D.

THIS enquiry has not received the attention which I ought to have given it. The few trials I have made in it are clear; but the number of them is not so great as I could wish: but it was in vain for me to think of conducting such extensive series of experiments upon an equal scale. Had I possessed an income of three thousand a year, I should have been foiled in the attempt. I am very far from offering this course of trials as a complete system of agriculture: it does not belong to a husbandman, in the possession of so few advantages as myself, to think of executing works which are in the reach alone of ample fortunes. The experiments I did venture on, have run away with some hundred pounds more than I ever designed to bestow on them. The following trials on the quantity of pease for seed are in small: they are not, however, the less useful on that account.

EXPERIMENT N° I.

April 26th 1765, marked ten square perches of winter fallowed land, in field M*, that yielded barley in 1764, and sowed them with the following quantities of white pease:

- N° 1. With $\frac{1}{5}$ of a pint.
2. With $\frac{2}{5}$ of ditto.
3. With $\frac{3}{5}$ of ditto.
4. With $\frac{4}{5}$ of ditto.
5. With 1 pint.
6. With $1\frac{1}{5}$ of ditto.
7. With $1\frac{2}{5}$ of ditto.
8. With $1\frac{3}{5}$ of ditto.
9. With $1\frac{4}{5}$ of ditto.
10. With 1 quart.

Every

Every circumstance of culture and management were exactly the same.
The produce as follows:

							P.	Q.	P.
N° 1.	-	-	-	-	-	-	0	0	1½
2.	-	-	-	-	-	-	0	1	0
3.	-	-	-	-	-	-	0	1	1½
4.	-	-	-	-	-	-	0	2	1½
5.	-	-	-	-	-	-	0	3	0
6.	-	-	-	-	-	-	0	3	0
7.	-	-	-	-	-	-	0	3	1
8.	-	-	-	-	-	-	0	4	0
9.	-	-	-	-	-	-	0	4	1
10.	-	-	-	-	-	-	0	3	0

The proportions of seed and produce *per* acre are as follow:

							Q.	B.	P.
N° 1. Produce,	-	-	-	-	-	-	0	3	3
Seed,	-	-	-	-	-	-	0	0	2
Clear produce,	-	-	-	-	-	-	0	3	1
2. Produce,	-	-	-	-	-	-	0	5	0
Seed,	-	-	-	-	-	-	0	1	0
Clear produce,	-	-	-	-	-	-	0	4	0
3. Produce,	-	-	-	-	-	-	1	0	3
Seed,	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	0	7	1
4. Produce,	-	-	-	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	1	3	3
5. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	1	4	2
6. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	1	4	0
Vol. I.									7. Pro-

							Q.	B.	P.
7. Produce,	-	-	-	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	1	6	0
8. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	2	0	0
9. Produce,	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	2	2	0
10. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	1	2	0

OBSERVATIONS.

This experiment, upon the whole, is very clear in the result. N° 6 being inferior to N° 5, is the only irregularity in it: all the other portions of seed form a regular rise and fall. It appears that four bushels and an half of seed are more beneficial than any other quantity. This surprized me greatly: for although some of our common farmers sow four bushels of hog pease, yet I never heard, in this country, of near that quantity of white-pease being sown. Some few Norfolk farmers, however, sow half a quarter of this sort; and the present experiment gives no slight reason to suppose their conduct right.

The regular rise of product from the lower quantities of seed to four bushels and an half, leaves no doubt but the superiority of produce must be owing to quantity of seed alone. The great falling off of five bushels, shews that such a quantity is too great. The poorness of the produce, from the small quantities, is not at all surprizing; for none of the perches being hand-boed (the omission of all operations of that sort was absolutely necessary, that the quantity of seed might be the only circumstance to occasion variations in the crops) the weeds made almost as great an appearance in N° 1 and 2 as if no pease had been sown; and had the season been less dry, would totally have ruined the small crop. N° 3 carried a poor appearance in this respect: the larger quantities of seed shewed

shewed plainly how much better able they were than the small ones to resist and defeat those enemies.

EXPERIMENT N° 2.

The last week in April 1766 marked twelve square perches in field T, that yielded broadcast oats in 1765, the stubble of which had been ploughed up in October, and stirred once in March. Sowed them with the following portions of hog-pease, the large sort :

- N° 1. With $\frac{1}{5}$ of a pint.
2. With $\frac{2}{5}$ of ditto.
3. With $\frac{3}{5}$ of ditto.
4. With $\frac{4}{5}$ of ditto.
5. With 1 pint.
6. With $1\frac{1}{5}$ of ditto.
7. With $1\frac{2}{5}$ of ditto.
8. With $1\frac{3}{5}$ of ditto.
9. With $1\frac{4}{5}$ of ditto.
10. With 1 quart.
11. With 1 ditto and $\frac{1}{5}$ of a pint.
12. With 1 ditto and $\frac{2}{5}$ of a pint.

All the succeeding articles of management were exactly the same The produce as follows :

								P. Q. P.		
N° 1.	}	-	-	-	-	-	-	Came to nothing.		
2.		-	-	-	-	-	-			
3.		-	-	-	-	-	-	0	1	$1\frac{1}{2}$
4.		-	-	-	-	-	-	0	2	0
5.		-	-	-	-	-	-	0	3	0
6.		-	-	-	-	-	-	0	3	0
7.		-	-	-	-	-	-	0	3	0
8.		-	-	-	-	-	-	0	3	$1\frac{1}{2}$
9.		-	-	-	-	-	-	0	3	$1\frac{1}{2}$
10.		-	-	-	-	-	-	0	4	0
11.		-	-	-	-	-	-	0	4	0
12.		-	-	-	-	-	-	0	3	1

The proportions of feed, and produce *per* acre, are as follow :

							2	B. P.
N ^o 3.	Produce,	-	-	-	-	-	1	0 3
	Seed,	-	-	-	-	-	0	1 2
Clear produce,							0	7 1
4.	Produce,	-	-	-	-	-	1	4 2
	Seed,	-	-	-	-	-	0	2 0
Clear produce,							1	2 2
5.	Produce,	-	-	-	-	-	1	7 0
	Seed,	-	-	-	-	-	0	2 2
Clear produce,							1	4 2
6.	Produce,	-	-	-	-	-	1	7 0
	Seed,	-	-	-	-	-	0	3 0
Clear produce,							1	4 0
7.	Produce,	-	-	-	-	-	1	7 0
	Seed,	-	-	-	-	-	0	3 2
Clear produce,							1	3 2
8.	Produce,	-	-	-	-	-	2	2 3
	Seed,	-	-	-	-	-	0	4 0
Clear produce,							1	6 3
9.	Produce,	-	-	-	-	-	2	2 3
	Seed,	-	-	-	-	-	0	4 2
Clear produce,							1	6 1
10.	Produce,	-	-	-	-	-	2	4 0
	Seed,	-	-	-	-	-	0	5 0
Clear produce,							1	7 0
11.	Produce,	-	-	-	-	-	2	4 0
	Seed,	-	-	-	-	-	0	5 2
Clear produce,							1	6 2
							12. Pro-	

							Q.	B.	P.
12. Produce,	-	-	-	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	1	3	2

OBSERVATIONS.

There are some contradictions in the event of this experiment, which are beyond my power to account for. N° 6 and 7 being inferior to N° 5, and N° 9 being inferior to N° 8, are both contradictions to the general turn of the other numbers. As five bushels are more beneficial than any other quantity, the nearer they advanced to that point, the greater the produce should be: but these variations must be expected sometimes in experimental husbandry; when they happen, the general result should be more attended to than the comparison of particular parts. That five bushels are the most advantageous quantity of seed for an acre of land, cannot, from this trial, be doubted; and it is hence evident, that most of our common farmers (that do not hand-hoe their pease) under-feed their pea crops. Nothing is to be wondered at in the practice of such strict economists that save money: but they are nevertheless losers, by not sparing more seed for their fields.

The extreme wetness of this season gave the thick-sown crops a great advantage: the thin ones were quite destroyed by weeds. In such years, if one does not stock the land with useful plants, it will most assuredly stock itself with pernicious ones. Notwithstanding N° 1 and 2 being destroyed by weeds, yet was there not one to be seen at harvest in N° 10, 11, and 12: the thickness of the pease had quite smothered them.

EXPERIMENT N° 3.

Sowed twelve square perches with hog-pease, in field L*, the middle of April 1766: the land had been cropped with potatoes in 1765: ploughed on to the ridge in November, and stirred again in March following: the following are the quantities sown.

N° 1.

- N^o 1. With $\frac{2}{5}$ of a pint.
 2. With $\frac{1}{5}$ of ditto.
 3. With $\frac{4}{9}$ of ditto.
 4. With 1 pint.
 5. With $1\frac{1}{5}$ of ditto.
 6. With $1\frac{2}{5}$ of ditto.
 7. With $1\frac{3}{5}$ of ditto.
 8. With $1\frac{4}{5}$ of ditto.
 9. With 1 quart.
 10. With 1 ditto and $\frac{1}{5}$ of a pint.
 11. With 1 ditto and $\frac{2}{5}$ of ditto.
 12. With 1 ditto and $\frac{3}{5}$ of ditto.

The culture and every article of management perfectly similar. The produce of each as follows:

N ^o	P.	Q.	P.
1.	0	1	0
2.	0	1	1
3.	0	2	0
4.	0	2	0
5.	0	2	$1\frac{1}{2}$
6.	0	3	0
7.	0	3	0
8.	0	3	1
9.	0	3	$1\frac{1}{2}$
10.	0	4	0
11.	0	3	$1\frac{1}{2}$
12.	0	3	0

Seed and produce proportioned *per* acre are as follow:

N ^o	Produce,	Seed,	Q.	B.	P.
1.	-	-	0	5	0
	-	-	0	1	0
Clear produce,	-	-	0	4	0
2.	-	-	0	7	2
	-	-	0	1	2
Clear produce,	-	-	0	6	0

3. Pro-

	Q.	B.	P.
3. Produce,	-	-	-
Seed,	-	-	-
Clear produce,	1	0	0
4. Produce,	1	2	0
Seed,	0	2	2
Clear produce,	0	7	2
5. Produce,	1	5	3
Seed,	0	3	0
Clear produce,	1	2	3
6. Produce,	1	7	0
Seed,	0	3	2
Clear produce,	1	3	2
7. Produce,	1	7	0
Seed,	0	4	0
Clear produce,	1	3	0
8. Produce,	2	1	2
Seed,	0	4	2
Clear produce,	1	5	0
9. Produce,	2	2	3
Seed,	0	5	0
Clear produce,	1	5	3
10. Produce,	2	4	0
Seed,	0	5	2
Clear produce,	1	6	2
11. Produce,	2	2	3
Seed,	0	6	0
Clear produce,	1	4	3

12 Pro.

						Q. B. P.		
12. Produce,	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	1	0	2

OBSERVATIONS.

In this as in former trials, there are some contradictions which it is vain to attempt accounting for. But the superiority of five bushels and an half to all the other portions is clear, and demands the principal attention. The products before that number being lower, and those after it, the same prove this sufficiently. The expediency of sowing such large quantities of pease on an acre of land, must be owing to the great power of thick crops in killing all the weeds. Two bushels and an half are a common quantity of pease for an acre, but we find by this trial, that six bushels and an half are more proper.

EXPERIMENT N° 4.

The last week in April 1767, sowed twelve square perches of barley-land that had before received two earths, with the following quantity of pease in field P.

- N° 1. With $\frac{3}{5}$ of a pint.
2. With $\frac{4}{5}$ of ditto.
3. With 1 pint.
4. With $1 \frac{1}{5}$ ditto.
5. With $1 \frac{2}{5}$ ditto.
6. With $1 \frac{3}{5}$ ditto.
7. With $1 \frac{4}{5}$ ditto.
8. With 1 quart.
9. With 1 ditto and $\frac{1}{5}$ of a pint.
10. With 1 ditto and $\frac{2}{5}$ of ditto.
11. With 1 ditto and $\frac{3}{5}$ of ditto.
12. With 1 ditto and $\frac{4}{5}$ of ditto.

The culture and all points of management equal in every respect:
The produce as follows:

										P.	Q.	P.
N° 1.	-	-	-	-	-	-	-	-	-	0	2	0
2.	-	-	-	-	-	-	-	-	-	0	2	1½
3.	-	-	-	-	-	-	-	-	-	0	3	0
4.	-	-	-	-	-	-	-	-	-	0	3	0
5.	-	-	-	-	-	-	-	-	-	0	3	1½
6.	-	-	-	-	-	-	-	-	-	0	4	0
7.	-	-	-	-	-	-	-	-	-	0	4	1
8.	-	-	-	-	-	-	-	-	-	0	4	1
9.	-	-	-	-	-	-	-	-	-	0	4	1½
10.	-	-	-	-	-	-	-	-	-	0	4	0
11.	-	-	-	-	-	-	-	-	-	0	3	1
12.	-	-	-	-	-	-	-	-	-	0	3	0

The proportions of seed and produce *per* acre.

										Q.	B.	P.
N° 1. Produce,	-	-	-	-	-	-	-	-	-	1	0	2
Seed.	-	-	-	-	-	-	-	-	-	0	1	2
Clear produce,	-	-	-	-	-	-	-	-	-	0	7	0
2. Produce,	-	-	-	-	-	-	-	-	-	1	5	3
Seed,	-	-	-	-	-	-	-	-	-	0	2	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	3	3
3. Produce,	-	-	-	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	-	0	2	2
Clear produce,	-	-	-	-	-	-	-	-	-	1	4	2
4. Produce,	-	-	-	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	-	-	-	0	3	0
Clear produce,	-	-	-	-	-	-	-	-	-	1	4	0
5. Produce,	-	-	-	-	-	-	-	-	-	2	2	3
Seed,	-	-	-	-	-	-	-	-	-	0	3	2
Clear produce,	-	-	-	-	-	-	-	-	-	1	7	1

							Q.	B.	P.
6. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	4	0
Clear produce,	-	-	-	-	-	-	2	0	0
7. Produce,	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	0	4	2
Clear produce,	-	-	-	-	-	-	2	2	0
8. Produce,	-	-	-	-	-	-	2	6	2
Seed,	-	-	-	-	-	-	0	5	0
Clear produce,	-	-	-	-	-	-	2	1	2
9. Produce,	-	-	-	-	-	-	2	7	3
Seed,	-	-	-	-	-	-	0	5	2
Clear produce,	-	-	-	-	-	-	1	2	1
10. Produce,	-	-	-	-	-	-	2	4	0
Seed,	-	-	-	-	-	-	0	6	0
Clear produce,	-	-	-	-	-	-	1	6	0
11. Produce,	-	-	-	-	-	-	2	1	2
Seed,	-	-	-	-	-	-	0	6	2
Clear produce,	-	-	-	-	-	-	1	3	0
12. Produce,	-	-	-	-	-	-	1	7	0
Seed,	-	-	-	-	-	-	0	7	0
Clear produce,	-	-	-	-	-	-	1	0	0

OBSERVATIONS.

This trial though not perfectly regular, is pretty decisive in pointing out the most advantageous quantity of seed. Four bushels, and two pecks are superior to any of the other portions. The rise to that portion, and the fall from it, mark the point of superiority as well as the amount of the product of that particular quantity.

OBSER-

GENERAL OBSERVATIONS.

From these trials it appears upon the whole, that the most advantageous quantities of pease for an acre of land, extend from four bushels and an half to five and an half: this is a determinate result, and appears to be sufficiently authoritative to be a guide in future conduct.

This portion of five bushels is larger than the farmers commonly use: in this neighbourhood they seldom sow more than from two to three bushels: and therein they agree with many of our modern writers upon the subject of husbandry. But in some other counties four bushels, and even more are used: these trials therefore are rather higher than the generality of common practice.

It should be remembered, that two out of these three years have been remarkably wet: how far this circumstance affected the quantity of seed, the reader must judge: that a remarkable tendency of the season may have an effect upon this part of husbandry, is easily to be conceived.

But these experiments are so few in number, that I shall not venture to enlarge upon the result: relative to my own conduct I have dependance enough in them, to act in compliance to their result: and shall accordingly much increase my quantity of pea-seed for the future. This I think is expressing the idea in the clearest manner I am able.

S E C T. V.

MISCELLANEOUS EXPERIMENTS.

THE trials which it is necessary to arrange under this head are very few in number; but to have inserted them under any of the preceding heads, would have caused a manifest confusion. Numerous divisions of a subject, have something of affectation in the appearance; but in registering a great variety of facts, such a method must nevertheless be followed, to prevent a confusion that would destroy half the utility of the undertaking. The experiments in husbandry, that have hitherto been published, have been generally registered in a promiscuous manner. The smallness of the number admitted this negligence: but let the reader judge whether it was consistent with common sense to minute all these experiments upon all sorts of subjects promiscuously, or in the order they were executed? Such an attempt would have totally destroyed the small degree of use to which I hope they may form pretensions.

EXPERIMENT N^o I.

The beginning of October 1765 ploughed up a piece of barley-stubble on to the ridge for winter, and manured a square perch of it at the rate of twenty loads an acre. In March 1766 ploughed it twice more; and again the first week in April, when it was again manured at the rate of twelve loads *per* acre. Sowed it with one pint and three-fifths of white pease; which is the proportion of four bushels *per* acre. At the same time, upon the same land, sowed another perch with the same seed, but without any manure. When the pease of these perches were six inches high, they were very carefully hand-hoed with hoes four inches wide; and when eight inches in height, they were promiscuously stuck, in the garden method: this excluded any other culture. The middle of August

gust they were ripe enough to cut. The pease were then torn from the sticks, threshed and measured. The produce of the manured perch was ten quarts, or *per* acre six quarters two bushels: that of the unmanured one six quarts, or *per* acre three quarters six bushels.

Upon these quantities I must remark, that the advantage of supporting the pease appears to be immense. From the most accurate observation I have been able to make on the product of pease on these soils, the unmanured, without this assistance, would not have produced more than two quarters four bushels *per* acre: and as to the manured one, I am very confident the product, in the common management, would not have more than half equalled it.

The reason of sticking the pease being of such great utility to the crop, is extremely evident to any one who views good common crops with attention. Whenever the crop is good, it is so very thick, some time before harvest, that the air is almost excluded from all the lower parts of the plants. If you raise a bunch of them, you will see the leaves all rotted off, and the stalks quite bare, the blossoms all upon the straggling branches that enjoy the influence of the sun and air. This is the reason that pease are so beneficial to the land when the crop is great: they not only kill all the weeds, but *half themselves* into the bargain, and keep the surface of the soil quite in a putrid fermentation. It is, however, very easily to be imagined that this quality must prevent the growth of many pods: accordingly you will frequently see the first two or three feet of whole bunches of plants without a single leaf, blossom, or pod; and at harvest much of the pease rotten. All this is removed by sticks: the crop rises to the height of five to seven feet, the air circulates freely to the bottom of the plants, and they are accordingly podded almost to the bottom; but at the same time that the product is so improved, the soil will reap no benefit; on the contrary, it will suffer a loss: for in the common management, the same circumstance that damages the crop improves the land; but the advantage the crop reaps is far superior to any consideration of this sort.

In the next place, let me observe, that this trial was not made with a view to introduce the practice into general management, but to discover the nature of the plant, which is always of use to know, even to the most common of husbandmen. More extensive minds may, in future times, take hints from such random experiments, that may open to discoveries equally brilliant and useful.

Six quarters two bushels of these pease are worth 9l. 7s. 6d. This produce is very great, and would perhaps come not far short of paying all the expences of the method, or at least advance nearer to it than some
may

may at first imagine. *Quere*, in what method can the effect be preserved without so large an expence? The mixture of pease and beans was certainly thought of with this design; but it never answers greatly.

EXPERIMENT N° 2.

The second week in April 1767 drilled two perches of white pease upon a piece of land in field L*, that was fallowed throughout the year 1766, and by March 1767 had received three common manurings. The drills were two feet asunder, and the quantity of seed on each perch four-fifths of a pint, which are two bushels *per* acre. They came up, and flourished with great luxuriance; were both thoroughly hand-hoed, when six inches high, and every weed pulled from out the rows: when nine inches high, one perch was sticked, and the other not. Before the pease of the latter joined across the rows, they were hand-hoed again: the other perch was hand-hoed thrice in all, and all weeds plucked from under the sticks that appeared. They were cut the beginning of August. The produce of the sticked was eleven quarts one pint, or *per* acre seven quarters one bushel and two pecks. The produce of the other was eight quarts, or five quarters *per* acre.

These crops are both very great; but the former I apprehended uncommonly so. The difference of above two quarters is to be attributed to nothing but the sticking; since in every thing else they are equal. The perch unsticked was so excessively thick upon the ground, that full half the pease-straw was rotten. Another circumstance, which by no means should be omitted, is the superiority of the *quality* of the produce, which amounted to at least 2s. a quarter in favour of the sticked: this, I think, is also perfectly consistent with reason.

Upon the whole, this trial is a fresh proof that pease require much more air among the stalks and branches, than it is possible they should enjoy in the common management. The method of effecting such a purpose is another enquiry, which justly demands the attention of the curious in experimental husbandry. The preceding trials prove sufficiently that the new husbandry is not a cure for the evil, from the vast damage the pease receive in horse-hoeings, &c.

C H A P. II.

O F B E A N S.

BEFORE I proceed to insert the experiments I made on beans, it will be proper to mention in brief the state of the bean culture in this neighbourhood; as that will explain a few circumstances, which might otherwise be thought mistaken.

In general our lands are reckoned too weak for beans. The farmers think it in vain to sow them upon any but very strong clays; and as the stiff soils of this country are rather wet loams than clays, it is but here and there a field which they think strong enough for them. Their methods of sowing are various: some sow them broadcast on the ground, and plough them in on one earth flat: some few plough the ground first, and then harrow them in: the best farmers strike the ground into balks, then half-plough it for ridging, and then sprain the beans into two furrows, in such a manner that they come up in an irregular double row on the sides of each ridge, being covered by the plough in finishing the ridge: and some others I have heard of, who sprain them in this manner, but so as to have them come up in one row along the top of each ridge.

N. B. Our ridges are always three feet over.

Respecting the culture while growing, all our farmers hoe them, whether sown promiscuously or in rows. If they are broadcast on the flat, they hoe them out like turneps: if a double row on each ridge, they hoe the furrows, and also the top of the ridge between the rows, at the expence of nine shillings *per* acre. The few who sow a single row, plough between them with the common plough, drawing the land alternately

alternately into balks, and shutting them up; which is hoeing *from* and *to* the plants; besides which they hand-hoe the rows themselves, if they are very weedy. The crops vary greatly, but they are scarcely ever small: from four quarters to ten *per* acre, if they succeed; but some are so low as two or three; the greatest crops: those from seven to ten quarters are only gained, I believe, from what they call the *tick-bean*; which is half as big again as the common horse-bean, and of a lighter colour.

In general they sow wheat after beans, notwithstanding their succeeding corn; — reckoning beans, well managed, to equal a fallow.

S E C T.

alternately into balks, and flouting them up; which is hoeing from and to the plants, besides which they hand-hoe the rows themselves, if they are very weedy. The crops are generally, but they are sometimes small, from four quarters to ten per acre, if they succeed, but some are as low as two or three; the greatest crops, those from fifteen to ten quarters are only gained, I believe, from what they call the tick-bean, which is half as big again as the common horse-bean, and of a lighter colour.

S E C T I.

Of the CULTURE of BEANS in the Old Method.

THE reader will please to carry in his mind the circumstance of my soil not being the sort which is preferred in this country for the culture of beans. I have only two fields of strong clay, only one of which has been cropped with beans. This will account for the small produce of some of the following experiments.

EXPERIMENT N^o I.

Culture, expences, and produce of a rood, field T, 1764.

CULTURE.

This piece yielded oats in 1763. The stubble was ploughed up in October, and the land well water-furrowed. The first week in March sowed the land with three pecks of horse-beans broadcast, and ploughed them in, leaving the land flat, and then well water-furrowed the whole.

The middle of May I agreed with my labourers to hand-hoe the beans twice with hoes six inches wide, for the price of 2 s. 6 d. the rood. This culture completely cleared the land of all weeds; a point of very great importance, and which I find, from this experiment, may be very well performed by this method. The end of August I reaped these beans, and, upon threshing, found the produce to be seven bushels.

think the profit of the crop is such as does not admit the opinion to be

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	0	6
Seed, - - - - -	0	3	0
Sowing, - - - - -	0	0	0 $\frac{1}{4}$
Water-furrowing, - - - - -	0	0	3
Hand-hoeing, - - - - -	0	2	6
Reaping, - - - - -	0	1	6
Harvesting, - - - - -	0	0	9
Threshing, - - - - -	0	1	2
	<hr/>		
Rent, &c. - - - - -	0	9	8 $\frac{1}{4}$
	0	4	3
	<hr/>		
	0	13	11 $\frac{3}{4}$

PRODUCE.

7 Bushels at 30 s. - - - - -	1	6	3
Expences, - - - - -	0	13	11 $\frac{3}{4}$
	<hr/>		
Profit, - - - - -	0	12	3 $\frac{1}{4}$

	£.	s.	d.
Ploughing, - - - - -	0	0	9
Carting in harvest, - - - - -	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	1	0 $\frac{3}{4}$
	<hr/>		
Clear profit, 2 l. 4 s. 10 d. - - - - -	0	11	2 $\frac{1}{2}$

OBSERVATIONS.

This profit upon a hoed crop, which by all accounts meliorates the soil sufficiently to prepare it for a crop of corn, is considerable. These beans throve with much luxuriance, and, after the hoeing, shewed how much that operation agreed with them; for they came on greatly in vigour. The value of this crop is much more considerable than pease would have produced, in the opinion of my bailiff: and in this observation I have great reason to believe him right. It should also be remarked, that the soil of this field, which is a loose woodcock loam, is not reckoned strong enough for beans by the farmers of the neighbourhood; and yet I think

think the profit of the crop is such as does not admit the opinion to be of force.

EXPERIMENT N^o 2.

Culture, expences, and produce of half an acre, field L*, 1764.

CULTURE.

This half acre yielded wheat in 1763, the stubble of which broke up in November of that year, being laid on to the ridge, and the land water-furrowed. The beginning of March ploughed it on to balks, that is half ploughed the former ridges: I then sowed the land, so ploughed broadcast with six pecks of tick beans, and turned them in by completing the earth, so as to leave it again upon the ridge. As soon as the beans were six inches high, I gave them a thorough hand-hoeing: the men cut up the plants wherever they stood nearer to each other than nine inches, and were very careful in leaving no part of the soil uncut with the hoes. When beans are sown on one spring earth, many clods will be found in the hoeing time: the farmers expect the hoers to give the remains of these clods a stroke or two with the hoe to break them; or at least to cut off any weeds that may take root in them. I viewed this crop with attention when it was sixteen inches high, and was of opinion, that another hoeing would be of great service to it, both in killing the weeds that had arose since the first hoeing; and also in further pulverising the surface: my bailiff agreed with me in opinion; and I accordingly ordered him to set the hoers again to work. This operation completed the culture, and left the soil in very good order. It was the second week in September before these beans were ready to cut. The produce two quarters and an half.

EXPENCES.

	£.	s.	d.
Two ploughings,	-	-	0 1 0
Water-furrowings,	-	-	0 0 3
Seed,	-	-	0 6 0
Sowing,	-	-	0 0 1½
First hand-hoeing,	-	-	0 3 9
Second ditto,	-	-	0 2 3
Reaping, &c.	-	-	0 3 0
X x 2			Harvesting,

	£.	s.	d.
Harvesting, - - - - -	0	1	6
Threshing, - - - - -	0	2	6
Rent, &c. - - - - -	1	0	4 $\frac{1}{2}$
	0	8	6
	1	8	10 $\frac{1}{2}$

PRODUCE.

2 $\frac{1}{2}$ Quarters of beans at 32 s. - - - - -	4	0	0
Expences, - - - - -	1	8	10 $\frac{1}{2}$
Profit, - - - - -	2	11	1 $\frac{1}{2}$
	£.	s.	d.
Ploughing, - - - - -	0	0	9
Carting, - - - - -	0	0	1 $\frac{1}{4}$
	0	0	10 $\frac{1}{4}$
Clear profit, 5 l. 0 s. 5 $\frac{1}{2}$ d. per acre. - - - - -	2	10	2 $\frac{1}{2}$

OBSERVATIONS.

This is a very noble profit, and not exceeded by any common corn crop. The hoeing has kept the land very free from weeds, and the shade of the beans admirably prepared it for any other crop. It is sown with wheat, the crop of which on it is come up, and carries an exceeding good appearance: in this way we find the profit of a clean crop of beans extends beyond the mere amount of produce. However, without such a consideration we may venture to pronounce, that the profit of the beans themselves far beyond what can, with any reason, be expected from wheat itself, if sown with no other advantages than these beans enjoyed: they succeeded one corn crop, and are followed by another; such is the power of good hoeing. Had this crop been left to itself without that operation, the land would have been left full of weeds and the product of beans in all probability not half so considerable.

EXPERIMENT N° 3.

Culture, expences, and produce of half a rood, field L*, 1764.

CULTURE.

CULTURE.

This piece yielded barley in 1763, the stubble of which was ploughed on to the ridge in November. The latter end of February I took the opportunity of a hard frost to manure, with three loads of rotten farm-yard dung. The second week in March sowed a peck and half of beans over the land, and then ploughed it again on to the ridge; turning in both the seed and the dung. The plants came up with great vigour, and were well hand-hoed when six inches high, and a second time a fortnight after. Reaped the first week in September: Product five bushels.

PROPORTIONS *per* ACRE.

EXPENCES.

							£	s.	d.
Two ploughings,	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	3
Manuring,	-	-	-	-	-	-	0	7	9
Seed,	-	-	-	-	-	-	0	12	0
Sowing,	-	-	-	-	-	-	0	0	3
First hand-hoeing,	-	-	-	-	-	-	0	6	0
Second ditto,	-	-	-	-	-	-	0	3	6
Reaping,	-	-	-	-	-	-	0	6	0
Harvesting,	-	-	-	-	-	-	0	2	6
Threshing,	-	-	-	-	-	-	0	5	0
							2	5	3
Rent, &c.	-	-	-	-	-	-	0	17	0
							3	2	3

PRODUCE.

5 Quarters at 30 s.	-	-	-	-	-	-	7	10	0
Expences,	-	-	-	-	-	-	3	2	3
Profit,	-	-	-	-	-	-	4	7	9
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	3	0
Manuring,	-	-	-	-	-	-	0	10	0
Carting in harvest,	-	-	-	-	-	-	0	0	3 $\frac{3}{4}$
							0	13	3 $\frac{3}{4}$
Clear profit,	-	-	-	-	-	-	3	14	5 $\frac{1}{4}$

OBSER-

OBSERVATIONS.

The most striking lesson which this experiment conveys is the propriety of sowing beans on such a soil when well manured. This field is one of our wet loams, not clay; and yet both product and profit are extremely great. The land was left in excellent order for wheat or any other crop. I think the great success of this trial upon this loam in so wet a year, fully proves that the ideas of our farmers are mistaken in cultivating beans only on strong clays: the article of manuring is indeed somewhat an answer; for few of them would be persuaded to spare so much dung upon a bean crop; and yet no crop can apparently pay for it better. The hand-hoeing which is successively given to the beans, destroys all the weeds the dunging brings up, keeps the crop perfectly clean, and the surface in a loose state. This husbandry appears upon the whole to be very spirited and accurate, and does our farmers more honour than most of their methods.

EXPERIMENT N° 4.

Culture, expences, and produce of half a rood, field T, 1764.

CULTURE.

The culture of beans engaged my attention upon my beginning to farm, and I should in 1763 have had a small crop; but my bailiff over-ruled, and insisted that my land was by no means strong enough. His persisting in this opinion induced me this year to form some trials in small, that I might be convinced if my soil really denied me the possession of beans, for want of strength. With this view I marked this piece among others: it bore oats in 1763: the stubble of which was ploughed up in November. The middle of March struck the land into balks; that is, half ploughed the ridges, and then sowed it with a peck and half of horse beans: turned in the seed by finishing the ploughing; leaving the land on the ridge. Hand-hoed the beans when six inches high, for the first time, and again at ten inches for the second: this crop never made any great appearance. It was reaped the beginning of September: The produce one bushel and three pecks.

EXPENCES.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Water-furrowing,	0	0	3
Seed,	0	12	0
Sowing,	0	0	3
Twice hand-hoeing,	0	9	0
Reaping,	0	5	6
Harvesting,	0	1	9
Threshing,	0	1	9
	1	12	6
Rent, &c.	0	17	0
	2	9	6

PRODUCE.

14 Bushels at 30s.	2	12	6
Expences,	2	9	6
Profit,	0	3	0

	£.	s.	d.
Ploughing,	0	3	0
Carting in harvest,	0	0	3½
	0	3	3½
The above profit,	0	3	0
Loss,	0	0	3½

OBSERVATIONS.

This is a very unsuccessful trial; and yet the beans suffered no disaster, and were kept very clean by the hand-hoeings. In this case I cannot but attribute the failure to a want of strength or nourishment in the soil: I depended upon the hand-hoeing providing food for the beans, by killing all the weeds that rob and impoverish them; but herein I was mistaken, and the crop turned out a poor one notwithstanding its being clean. Perhaps these soils require a manuring to make them produce beans well; the last registered trial gives one reason likewise to think so: but one or two trials ought never to be depended upon in cases of this nature: I shall therefore repeat and vary my experiments on beans next year, that I may be able at last to know the real nature of my own land.

EXPER-

EXPERIMENT N° 5.

Culture, expences, and produce of a rood, field L*, 1765.

CULTURE.

Yielded broadcast barley in 1764, the stubble of which was ploughed up in October. The last week in March half ploughed the ridges, and sowed it with three pecks of horse-beans, turning them in by finishing the ploughing, which left the land on the ridge. I should have got them into the ground early in the month; but the first fortnight was such unfavourable weather, that very little tillage could go forward to advantage.

Hand-hoed the plants with eight inch hoes as soon as eight inches high, and repeated the operation when they were twelve high. This rule of height I do not think a bad one; for before the plants are six or eight inches high, they are not fit to hoe; and after they are twelve or fourteen, they branch out or spread so much, that the operation could not be performed to any purpose, without damaging the crop: for this reason, whatever hand-hoeing is given should be while the beans are advancing from six to fourteen inches in height, unless the land happens to be so very foul as to require an extraordinary attention; in which case, the plants may require a hoeing between the growth of fourteen and eighteen or twenty inches; but such an hoeing should be performed very carefully. This season was so remarkable a drought, that many crops suffered, especially beans and black oats. This crop shewed no good countenance, notwithstanding the weeds never getting up the least after the hoeings: they plainly wanted rain much. Reaped them the last week in August. Product three bushels and three pecks.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	0	6
Sowing,	-	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	-	0	2	9 $\frac{1}{2}$
Twice hand-hoeing,	-	-	-	-	-	-	0	2	3
Reaping,	-	-	-	-	-	-	0	1	6

Harvesting,

	£.	s.	d.
Harvesting, - - - - -	0	0	4
Threshing, - - - - -	0	0	6
	<hr/>		
	0	8	1 $\frac{3}{4}$
Rent, &c. - - - - -	0	4	3
	<hr/>		
	0	12	4 $\frac{3}{4}$

PRODUCE.

3 Bushels and 3 pecks at 32 s. - - - - -	0	15	0
Expences, - - - - -	0	12	4 $\frac{3}{4}$
	<hr/>		
Profit, - - - - -	0	2	7 $\frac{1}{4}$
	<hr/>		
	£.	s.	d.
Ploughing, - - - - -	0	0	6
Carting in harvest, - - - - -	0	0	1 $\frac{1}{2}$
	<hr/>		
	0	0	7 $\frac{3}{4}$
	<hr/>		
Clear profit, 7 s. 11 d. per acre, - - - - -	0	1	11 $\frac{3}{4}$
	<hr/>		

OBSERVATIONS.

The extreme dry weather, which held throughout most part of the season, prevented this crop from being considerable. It is here a common opinion, that dry years are very prejudicial to beans. The culture bestowed upon them, was very effectual in eradicating the weeds; a circumstance of more import than 7 s. profit: for a fallow crop that prepares well for wheat, and pays the expence of tillage and rent, is alone a profitable circumstance.

EXPERIMENT N° 6.

Culture, expences, and produce of a rood, field T, 1765.

CULTURE.

This piece yielded wheat in 1764, the stubble of which was ploughed in November on to the ridge: the end of March sowed two pecks of horse-beans over the ridges, and ploughed them in, by throwing five ridges together, leaving the land flat. I water-furrowed it well, on account of this circumstance: for bean-land is generally on the ridge, which

which never requires so much draining. They came up very favourably, and were hand-hoed in the turnep manner with bean-hoes, leaving them about a foot from each other. The dry weather coming on, more hoeings were not necessary, or could at least be well dispensed with. The crop made no great appearance during the season; and before harvest were much speckled, and carried a sickly appearance. The produce two bushels and one peck.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	0	6
Sowing,	-	-	-	-	-	-	0	0	0 $\frac{1}{4}$
Seed,	-	-	-	-	-	-	0	1	10 $\frac{1}{2}$
Water-furrowing,	-	-	-	-	-	-	0	0	3
Once hand-hoeing,	-	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	-	0	1	6
Harvesting,	-	-	-	-	-	-	0	0	3
Threshing,	-	-	-	-	-	-	0	0	4
							<hr/>		
Rent, &c.	-	-	-	-	-	-	0	6	9 $\frac{1}{4}$
							0	4	3
							<hr/>		
							0	11	0 $\frac{1}{4}$

PRODUCE.

2 Bushels and 1 peck at 32 s.	-	-	-	-	-	-	0	9	0
							<hr/>		
Loss,	-	-	-	-	-	-	0	2	0 $\frac{1}{4}$
							<hr/>		
Ploughing,	-	-	-	-	-	-	0	0	6
Carting in harvest,	-	-	-	-	-	-	0	0	1 $\frac{1}{2}$
							<hr/>		
							0	0	7 $\frac{1}{4}$
							<hr/>		
Total loss, 10 s. 7 d. per acre,	-	-	-	-	-	-	0	2	7 $\frac{3}{4}$
							<hr/>		

OBSERVATIONS.

This crop, like all others, suffered from the season; but I did not apprehend the produce would be so small. In one respect, the giving but one hand-hoeing was of bad consequence; for the drought was so severe, that the mere pulverising the surface would have enabled the soil to imbibe the more dew, and to retain the slight rains that fell; though it is a question whether the hand-hoe cuts deep enough for the effect.

EXPE-

EXPERIMENT N^o 7.

Culture, expences, and produce of a rood, field L*, 1766.

CULTURE.

This rood was sown with barley in 1765; the stubble of which was ploughed up in October, and five loads of rotten farm-yard dung at the same time turned in. This I did with design to try the efficacy of very rich manuring upon beans, that I might discover if the unfavourableness of the soil was the result of a want of adhesion or fertility; the former of which is the reason assigned by the common farmers. The first week in March, the weather being uncommonly favourable, spread over it four loads more of the same dung, and sowed it broadcast with three pecks of tick-beans, ploughing in both the seed and dung. The land worked very mellow; more so, I think, than could be attributed to the season alone. It must be owing to the autumnal dunging, which I have great reason, from repeated observation, to think an excellent practice.

The beans came up very luxuriantly; their colour deep, and the leaves broad, and constantly held a countenance that strongly indicated much vigour. The weeds came up, as I expected, with a formidable appearance; but from the time the beans were eight inches high, I attacked them with hand-hoes, nor had they any respite: they were totally destroyed by three hoeings. The crop flourished away greatly throughout the summer; was reaped in August. The produce one quarter four bushels. The cutting off the tops of the beans when they begin to blossom, in imitation of gardeners, is a practice I have great reason to approve; but was not executed on this or any broadcast crop, on account of their growing so promiscuously as to prevent the men going among them without damage: it is, therefore, in a good measure peculiar to drilled and horse-hoed ones.

EXPENCES.

						£.	s.	d.
Two ploughings,	-	-	-	-	-	0	0	6
Labour twice manuring,	-	-	-	-	-	0	5	8
Water-furrowing,	-	-	-	-	-	0	0	2
Seed,	-	-	-	-	-	0	3	0
Sowing,	-	-	-	-	-	0	0	0 ³ / ₄
Thrice hand-hoed,	-	-	-	-	-	0	3	9
Reaping,	-	-	-	-	-	0	1	3

Y y 2

Harvesting,

Harvesting,	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	0	1	6
							0	16	7 $\frac{1}{4}$
Rent,	-	-	-	-	-	-	0	4	3
							1	0	10 $\frac{1}{4}$

P R O D U C E.

1 Quarter 4 bushels at 34s.	-	-	-	-	-	-	2	11	0
Expences,	-	-	-	-	-	-	1	0	10 $\frac{1}{4}$
Profit,	-	-	-	-	-	-	1	10	1 $\frac{1}{4}$
Ploughing,	-	-	-	-	-	-	0	1	2 $\frac{1}{4}$
Manuring,	-	-	-	-	-	-	0	3	10 $\frac{1}{2}$
Carting in harvest,	-	-	-	-	-	-	0	0	1 $\frac{1}{4}$
							0	5	2 $\frac{1}{4}$
Clear profit, 4 l. 19s. 7d. per acre,	-	-	-	-	-	-	1	4	10 $\frac{1}{4}$

O B S E R V A T I O N S.

In these experiments the reader will always be pleased to carry in his mind the price of the manure made at home. Nothing is charged in the first account but labour: this circumstance occasions the profit being so high. It will be remarked, in the proper place, that notwithstanding the objections to this mode of registering the manurings, yet it is the only one that admits not of *insurmountable* objections: however, the produce in quantity is seen, independent of any such circumstances, and the amount of it is certainly very great; sufficiently considerable to remove most objections to this soil in the culture of beans. I apprehend the deficiencies of it are merely those of fertility: but the product of beans is not the only circumstance to be attended to; the excellent order of the land after such manuring, and so much hoeing for succeeding crops, ought by no means to be forgotten. It may easily be imagined that a poor crop can hardly be expected.

EXPERIMENT

EXPERIMENT N^o 8.

Culture, expences, and produce of a Rood, field T*, 1766.

CULTURE.

Yielded barley in 1765, but an indifferent crop. The stubble contrary to my general conduct remained all winter: the first week in March, sowed three pecks of tick beans over it, and ploughed them in on the flat; water furrowed the land well, and so left them. This husbandry I cannot but condemn, although it is the common practice of three fourths of the kingdom. That the whole experiment might be consistent, I purposely omitted all hoeing and weeding; it was a very foul crop. The produce three bushels and a peck.

EXPENCES.

								£.	s.	d.
One ploughing,	-	-	-	-	-	-	-	0	0	3
Sowing,	-	-	-	-	-	-	-	0	0	0 $\frac{3}{4}$
Seed,	-	-	-	-	-	-	-	0	3	0
Water furrowing,	-	-	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Reaping,	-	-	-	-	-	-	-	0	1	3
Harvesting,	-	-	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	-	-	0	0	7
								<hr/>		
Rent, &c.	-	-	-	-	-	-	-	0	5	9 $\frac{1}{4}$
								0	4	3
								<hr/>		
								0	10	0 $\frac{1}{4}$

PRODUCE.

3 Bushels and 1 peck, at 32 s.	-	-	-	-	-	-	-	0	13	0
Expences,	-	-	-	-	-	-	-	0	10	0 $\frac{1}{4}$
								<hr/>		
Profit,	-	-	-	-	-	-	-	0	2	11 $\frac{3}{4}$
								£.	s.	d.
Ploughing,	-	-	-	-	-	-	-	0	0	7
Carting,	-	-	-	-	-	-	-	0	0	1 $\frac{3}{4}$
								<hr/>		
								0	0	8 $\frac{3}{4}$
								<hr/>		
								0	2	3
								<hr/>		

Clear profit, 9 s. per acre.

OBSERVATIONS.

The result of this trial gives one no encouragement to follow the slovenly practice of bad farmers: the crop is contemptible; and the state of the land is left in a yet greater objection to such a conduct, a fallow is absolutely necessary to this land, and merely owing to the beans not being hoed, so that in fact a year's rent of the succeeding fallow year, and all the other expences of it, ought to be charged to this crop of beans. I venture from the evidence of a thousand observations to assert, that if land really requires a fallow, the preceding management must have been execrable. This method therefore of cultivating beans ought indubitably to be exploded. The rendering them a fallow crop is perhaps in many cases the principal use of them: what therefore must a culture be that denies the greatest advantage attending them?

EXPERIMENT N° 9.

Culture, expences, and produce of a rood, field M*, 1766.

CULTURE.

Yielded oats in 1765; the stubble of which was ploughed flat in November. I designed it for an experiment on turneps, but changed my mind to try the culture of beans on a soil which all our farmers deem very improper, the gravelly; I ploughed in the seed two pecks of horse-beans the first week in March. The succeeding summer hand-hoed them twice: the crop carried a very favourable aspect: was reaped the second week in September: Product four bushels two pecks.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	0	6
Sowing,	-	-	-	-	-	-	0	0	0 ³ / ₄
Seed,	-	-	-	-	-	-	0	2	6
Two hand-hoeings,	-	-	-	-	-	-	0	2	3
Reaping,	-	-	-	-	-	-	0	1	3

Har-

								£.	s.	d.
Harvesting,	-	-	-	-	-	-	-	0	0	6
Threshing,	-	-	-	-	-	-	-	0	0	7
								0	7	7 $\frac{3}{4}$
Rent,	-	-	-	-	-	-	-	0	4	3
								0	11	10 $\frac{3}{4}$

P R O D U C E.

4 Bushels 2 pecks at 31 s.	-	-	-	-	-	-	-	0	17	5 $\frac{1}{4}$
Expences,	-	-	-	-	-	-	-	0	11	10 $\frac{3}{4}$
Profit,	-	-	-	-	-	-	-	0	5	6 $\frac{1}{2}$
								£.	s.	d.
Ploughing,	-	-	-	-	-	-	-	0	1	2 $\frac{1}{4}$
Carting,	-	-	-	-	-	-	-	0	0	1 $\frac{3}{4}$
								0	1	4
Clear profit 16 s. 10 d. per acre,	-	-	-	-	-	-	-	0	4	2 $\frac{1}{2}$

O B S E R V A T I O N S.

This trial, although the profit is not considerable, yet proves that the foil is at least upon a par with our clayey loams: the crop was better than those from the wet and heavier soils; that received no superior management. The common opinion in this case is contrary to the result of this trial; but we ought not to give much deference to common opinions of any sort that are not verified by experiment. I do not exhibit the present one as a proof, but a presumption which claims further consideration.

E X P E R I M E N T N^o 10.

Culture, expences, and produce of one acre, field S, 1767.

C U L T U R E.

Yielded tares in 1766, the stubble of which was ploughed up the 12th of March on to the ridge; sowing it at the same time with two bushels of horse beans, after the plough, with design to have them rise in double rows on each, according to the custom common among the farmers in this way of ploughing. In June, and July, hand hoed them twice

twice upon the farmers plan; at the price of 9 s. It was October before they were ready to cut; and wet weather succeeding; I had a very troublesome harvest with them. Produce 12 bushels.

EXPENCES.

								£.	s.	d.
One ploughing,	-	-	-	-	-	-	-	0	1	0
Seed,	-	-	-	-	-	-	-	0	7	0
Sowing,	-	-	-	-	-	-	-	0	0	3
Water-furrowing,	-	-	-	-	-	-	-	0	0	6
Twice hoeing, the first 6 s. the second 3 s.	-	-	-	-	-	-	-	0	9	0
Reaping,	-	-	-	-	-	-	-	0	4	6
Harvesting,	-	-	-	-	-	-	-	0	1	3
Threshing,	-	-	-	-	-	-	-	0	2	3
<hr/>										
Rent, &c.	-	0	-	-	-	-	-	1	5	9
								0	17	0
<hr/>										
								2	2	9
<hr/>										

PRODUCE.

12 Bushels at 24 s.	-	-	-	-	-	-	-	1	16	0
Loss,	-	-	-	-	-	-	-	0	6	9
<hr/>										
Ploughing,	-	-	-	-	-	-	-	0	2	5 $\frac{1}{4}$
Carting in harvest,	-	-	-	-	-	-	-	0	0	6 $\frac{1}{2}$
<hr/>										
								0	2	11 $\frac{3}{4}$
<hr/>										
Total loss,	-	-	-	-	-	-	-	0	9	8 $\frac{3}{4}$
<hr/>										

OBSERVATIONS.

This crop is a very poor one, and the loss not trifling, although it was hoed according to the best practice of the country. But notwithstanding this management, the land was left in very bad order; insomuch that the succeeding tenant found it absolutely necessary to give a fallow to it. From the crop that some of my neighbours get upon better soils than my own, though not with better management, I am almost inclined to think that the common notion of these loams not being strong enough for beans in common culture, to have some truth in it: but yet the evidence is no so clear

clear as I could wish; and unfortunately shall not be able in future to ascertain it.

EXPERIMENT N° II.

Culture, expences, and produce of one acre, field S, 1767.

CULTURE.

This acre was ploughed for the first time in October 1766, and well water-furrowed. In February manured it with twenty loads of rotten farm-yard dung. March 12th ploughed and sowed it in the same manner as N° 9. The manure bringing up many weeds, required a hoeing extraordinary, or three in all, which kept them under. Reaped the beans the first week in October. Produce four quarters.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Manuring,	0	8	0
Seed,	0	7	0
Sowing,	0	3	0
Water-furrowing,	0	0	9
Thrice hand-hoeing; the 1st time 6s. the 2d, 3s. and the 3d, 3s.	0	12	0
Reaping,	0	5	0
Harvesting,	0	1	3
Threshing,	0	4	0
	<hr/>		
Rent, &c.	2	3	0
	0	17	0
	<hr/>		
	3	0	0
	<hr/>		

PRODUCE.

4 Quarters at 24 s.	4	16	0
Expences,	3	0	0
	<hr/>		
Profit,	1	16	0
	<hr/>		

						£.	s.	d.	
Ploughing,	-	-	-	-	-	0	4	10½	
Manuring,	-	-	-	-	-	0	12	6	
Carting in harvest,	-	-	-	-	-	0	0	6½	
									0 17 11
Clear profit,	-	-	-	-	-				0 18 1

OBSERVATIONS.

Four quarters *per* acre are by no means a bad crop; whereas the same land, under an inferior culture, yielded only one quarter and an half. This shews that beans require a particular good treatment: an ample manuring, one ploughing, and one hand-hoeing extraordinary, are attended with an increase of two quarters and an half in the produce, and the vast additional advantage of rendering the crop a fallow instead of an exhausting one: a circumstance which certainly is the grand object of good husbandry, and only attainable by good farmers. The importance of gaining a beneficial crop every year, is an object of the first magnitude in agriculture: for certainly the loss of a fallow year in three, with no trifling expence of tillage, is an expence that highly behoves the farmer to save!—and yet more when crops may be raised that do not prejudice the land, but pay a considerable profit. No point, therefore, can better deserve the attention of the industrious husbandman than this of fallow crops: and on all soils, not light enough for turneps, beans claim a particular notice.

GENERAL OBSERVATIONS on these EXPERIMENTS.

It appears, from the preceding trials, that beans are, with common management, but a dubious crop. The produce and profit, under the general circumstances of culture, according to the practice of this neighbourhood, have turned out but trifling: however, that the exact state of the culture may be seen, I shall insert the particulars *per* acre of each trial, and draw averages of the whole according to circumstances.

EXPENCES.

EXPENCES.

								£.	s.	d.
N ^o 1.	-	-	-	-	-	-	-	3	0	2
2.	-	-	-	-	-	-	-	2	19	5 $\frac{1}{2}$
3.	-	-	-	-	-	-	-	3	15	6 $\frac{1}{2}$
4.	-	-	-	-	-	-	-	2	12	9 $\frac{1}{2}$
5.	-	-	-	-	-	-	-	2	12	1
6.	-	-	-	-	-	-	-	2	6	7
7.	-	-	-	-	-	-	-	5	4	5
8.	-	-	-	-	-	-	-	2	3	0
9.	-	-	-	-	-	-	-	2	8	11
10.	-	-	-	-	-	-	-	2	5	10 $\frac{3}{4}$
11.	-	-	-	-	-	-	-	3	17	11
Total	-	-	-	-	-	-	-	33	6	9 $\frac{1}{2}$

Average, 3 l. 0 s. 7 $\frac{1}{4}$ d.

PRODUCE.

								Q.	B.	P.
N ^o 1.	-	-	-	-	-	-	-	3	4	0
2.	-	-	-	-	-	-	-	5	0	0
3.	-	-	-	-	-	-	-	5	0	0
4.	-	-	-	-	-	-	-	1	6	0
5.	-	-	-	-	-	-	-	1	7	0
6.	-	-	-	-	-	-	-	1	1	0
7.	-	-	-	-	-	-	-	6	0	0
8.	-	-	-	-	-	-	-	1	5	0
9.	-	-	-	-	-	-	-	2	2	0
10.	-	-	-	-	-	-	-	1	4	0
11.	-	-	-	-	-	-	-	4	0	0
Total,	-	-	-	-	-	-	-	33	5	0

Average, 3 quarters 1 bushel 2 pecks.

P R O F I T and L O S S.

							£.	s.	d.
N ^o 1.	Profit,	-	-	-	-	-	2	4	10
2.	Ditto,	-	-	-	-	-	5	0	5 $\frac{1}{2}$
3.	Ditto,	-	-	-	-	-	3	14	5 $\frac{1}{4}$
5.	Ditto,	-	-	-	-	-	0	7	11
7.	Ditto,	-	-	-	-	-	4	19	7
8.	Ditto,	-	-	-	-	-	0	9	0
9.	Ditto,	-	-	-	-	-	0	16	10
11.	Ditto,	-	-	-	-	-	0	18	1
							<hr/>		
							18	13	1 $\frac{3}{4}$
							<hr/>		
4.	Loss,	-	-	-	-	-	0	0	3 $\frac{1}{2}$
6.	Ditto,	-	-	-	-	-	0	10	7
10.	Ditto,	-	-	-	-	-	0	9	8 $\frac{1}{4}$
							<hr/>		
							1	0	7 $\frac{1}{4}$
							<hr/>		
Total profit,							17	12	6 $\frac{1}{2}$

Average, 1 l. 12 s. 0 $\frac{1}{2}$ d.

It appears from these tables, that the average of the preceding methods of cultivating beans is rather expensive; for so I must esteem 3 l. *per acre*. Viewed in the light of a fallow, as this crop ever ought to be, that sum is considerable; but I know not in what way it can be reduced in common husbandry, without lessening the crops to a greater amount.

The product, *viz.* three quarters one bushel and two pecks, is not trifling, considering the circumstance of being produced by a fallow: and it is upon the whole sufficient to prove, that these soils are not so improper for beans as our common farmers apprehend: a circumstance which is particularly deserving attention from those who desist from cultivating beans under the general idea of their soil not being stiff enough.

The profit of 1 l. 12 s. *per acre* must likewise be viewed with an eye to the crop being a fallow one. If it was an exhausting one, this profit would by no means be despicable; but from a fallow crop it is considerable. In this husbandry beans are sown with a view to make the land, while fallowed, pay the expences of the fallow year, rent included. If this only is effected, the object should not be slighted; but when a clear profit of 1 l. 12 s. is gained, the importance of the management becomes very conspicuous.

But

But as some of these trials were manured for, I shall, in the next place, extract such, that the conclusions to be drawn from each may appear the clearer.

EXPENCES.

							£.	s.	d.
N ^o 3.	-	-	-	-	-	-	3	15	6 $\frac{1}{4}$
7.	-	-	-	-	-	-	5	4	5
11.	-	-	-	-	-	-	3	17	11
Total,	-	-	-	-	-	-	12	17	10 $\frac{3}{4}$

Average, 4 l. 5 s. 11 $\frac{1}{2}$ d.

PRODUCE.

							Q.	B.	P.
N ^o 3.	-	-	-	-	-	-	5	0	0
7.	-	-	-	-	-	-	6	0	0
11.	-	-	-	-	-	-	4	0	0
Total,	-	-	-	-	-	-	15	0	0

Average, 5 quarters.

PROFIT.

							£.	s.	d.
N ^o 3.	-	-	-	-	-	-	3	14	5 $\frac{1}{4}$
7.	-	-	-	-	-	-	4	19	7
11.	-	-	-	-	-	-	0	18	1
Total,	-	-	-	-	-	-	9	12	1 $\frac{1}{4}$

Average, 3 l. 4 s. 0 $\frac{1}{4}$ d.

As the manure used in these trials could be charged only as labour, the greatness of this profit should be considered in two ways: first, in respect to the common management of the farm-yard dung, every farmer must use it for some crops; and whichever it is used for, it will be gained at the expence of labour; consequently, in the rotation of crops thus manured, allowances should ever be made for certain fields annually improved at this small expence. To charge the home-made manure at the expence of that which is bought, would be to insert an annual falsehood, since all farmers must have this advantage: the care of cattle, without any attention to manure, will raise it.

But

But supposing the manure purchased, still I reply, the conclusions will not materially differ. One of these crops was manured with twenty-four loads *per* acre; another with thirty-six; and the third with twenty; the average twenty-six. The average produce is five quarters, which may be called 8 l. the question therefore, is the ability of that sum to pay the general expences, and the purchase of twenty-six loads of dung. The average profit in the preceding account is 3 l. 4 s. Now twenty-six loads at the Bury price of 3 s. *per* waggon load, (for the charges of carting, &c. are included before) or 1 s. 6 d. *per* cart load, are 1 l. 19 s. suppose turnpikes, beer, and extra's to make it 2 s. 6 d. *per* load; it is 3 l. 5 s. from whence, I think, it is very evident, that the fallow crop of beans will pay all expences of rent and culture; and also of manuring with twenty-six loads *per* acre. The profit on such an account is not to be looked for in the bean crop, but in those which follow; at the end of the year the land is in excellent order for wheat: amply manured, the weeds all killed by repeated hoeings, and the soil further enriched by the thick shade of a full bean crop. In such a situation, it cannot fail for several years of yielding the farmer a noble profit.

It should further be remarked upon the above tables, that the produce of five quarters, shew our clayey, brick earth, loams, to be by no means inadequate, with good management, to the culture of beans. Five quarters are a large crop; undoubtedly too large to allow of the opinion of our common farmers, that these loams are not *strong* enough for beans. Their deficiency consists in nothing but fertility: most of the fields are flat, not many of them hollow drained, and having for a long course of years received none of the influences of spirited husbandry, it is no wonder that the crops it produces without a change of management should be small. In the experiments in question, the only *improvement* is a good dunging, which farmers never bestow upon beans; and, in consequence of that, a little extra hoeing; the effect, is the product of five quarters. Let us in the next place, state the unmanured trials by themselves.

EXPENCES.

							£.	s.	d.
Total,	-	-	-	-	-	-	36	6	9 $\frac{1}{2}$
Deduct the manured,	-	-	-	-	-	-	12	17	10 $\frac{3}{4}$
Remains	-	-	-	-	-	-	23	8	10 $\frac{3}{4}$
Average,	2l.	18s.	7d $\frac{1}{4}$						

PRO-

PRODUCE.

							Q.	B.	P.
Total,	-	-	-	-	-	-	33	5	0
Deduct the manured,	-	-	-	-	-	-	15	0	0
Remains,	-	-	-	-	-	-	18	5	0
Average, 2 quarters 2 bushels, 2 pecks.									

PROFIT and LOSS.

							£.	s.	d.
Total profit.	-	-	-	-	-	-	17	12	6 $\frac{1}{2}$
Deduct the manured,	-	-	-	-	-	-	9	12	1 $\frac{1}{4}$
Remains,	-	-	-	-	-	-	8	0	5 $\frac{1}{4}$
Average, 1 l. 0 s. 0 $\frac{1}{2}$ d.									

The importance of manuring is hence sufficiently explained; the difference of five quarters and two is so great, that it must certainly convince every one; nor is it this superiority alone that claims attention; the land is in one case left in a far better state than in the other.

The great object in the bean culture is to make it a fallow for wheat or barley: the wretched husbandry of sowing them for a paltry profit, when the land has been exhausted by two crops of wheat and barley, is fully seen in those countries where they are made the last crop in the course; which is certainly putting the cart before the horse; their products are very poor. In some counties, I have been told it is the custom to weed their beans, by turning their sheep among them: it is hard to believe that the farmers can be so blind to their own interest*.

The crops of wheat which the best of our farmers gain after beans that have been well hand-hoed, prove, as clear as day-light, that they *may* be made a fallow crop: and the importance of executing it is very great both to the profit of the individual, and the benefit of the state.

* Since the above was written, I have had abundant opportunity of beholding this system of folly; and my ideas of it are fully confirmed.

The preceding trials, prove very strongly the necessity of hand-hoeing the common bean crops: it is upon that operation being thoroughly well performed, that the profit of the crop itself depends: and also the yet greater profit of making the beans a fallow: A man can scarcely expend five shillings in hoeing, that will not pay him twenty.

Dry years appear to be unfavourable to beans, upon these soils.

Our *gravelly* loams are equal in the production of beans to those which are *heavier*. But I should remark, that the gravel tried is stiff; very good, and rather too heavy to feed turneps off.

S E C T. II.

Of the CULTURE of BEANS in the New Method.

FROM my first entering into the range of experiment, I determined to try all crops in the drill method. I applied many to it that did not by any means bid fair; but with beans the case was very different. It is common husbandry in the clayey parts of Norfolk, in Kent, and in some parts of Essex, to drill beans; and though it is done by hand, yet the common farmers practising this method with beans, and with no other crop, is at least a strong presumption that there is a peculiar excellence in it. The circumstance which theoretically gave me an opinion of drilling beans, is their supporting themselves erect; whereas wheat, barley, oats, pease, &c. from the weakness of their stalks, fall almost to the ground, and totally impede the operations of horse and hand-hoeing, except while very young. It was for these reasons that I began to drill beans with greater hopes than from any other grain or pulse.

EXPERIMENT N^o I.

Culture, expences, and produce of a rood, field L*, 1764.

CULTURE.

This piece yielded barley in 1763; the stubble ploughed in October on to the ridge, and water-furrowed. The beginning of March ploughed it again, reversing the ridges, and spraining the beans by hand, so as to rise one row on each ridge; consequently they come up in equally distant rows, three feet asunder. I used in this method a peck and a half of horse-beans. The first week in June I horse-hoed the rows, by turning a furrow *from* the plants on each side with the plough: this is what we call in Suffolk drawing the ridges into baulks. All the scattered beans were

cut up by this operation. In a few days after I hand-hoed the rows with eight inch hoes, cutting up the beans where they were crowded, breaking the surface among the beans, and clearing it perfectly of weeds. I had in this work an example of the moderation of labourers when they have to do with young farmers: they asked me 6s. an acre for it, the price of broadcast hoeing;—*One is hoeing, said they, as well as the other.* However I got it done for $7\frac{1}{2}$ d. or 2s. 6d. *per acre.* Before the expiration of the month I repeated the horse-hoeing, contrary to the last; that is, turned the furrows to the rows, and leaving the ridges in their first form. In July I reversed it again, and, by a fourth operation, shut them up again, and gave a second hand-hoeing; which finished the culture. The beans, throughout the season, carried a fine appearance, and bid fair for a much better crop than my people had ever thought of. They were reaped in September. Produce one quarter one bushel.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	0	6
Water-furrowing,	0	0	3
Drilling,	0	0	$1\frac{1}{2}$
Seed,	0	1	6
Four horse-hoeings,	0	1	0
Two hand-hoeings,	0	1	3
Reaping,	0	0	9
Harvesting,	0	0	2
Threshing,	0	1	$1\frac{1}{2}$
	0	6	8
Rent, &c.	0	4	3
	0	10	11

PRODUCE.

1 Quarter 1 bushel at 30s.	1	13	9
Expences,	0	10	11
Profit,	1	2	10

Ploughing,

	£.	s.	d.	
Ploughing,	0	0	9	
Horse-hoeing,	0	0	8	
Drilling,	0	0	0 ¹ / ₄	
Carting in harvest,	0	0	0 ³ / ₄	
	<hr/>			0 1 6 ¹ / ₄
Clear profit, 4l. 5 s. 3 d. per acre	-			<hr/> 1 1 3 ¹ / ₄ <hr/>

OBSERVATIONS.

This experiment turned out very advantageously. It proves the new husbandry to be excellent in the culture of beans. This soil is agreed by all the common farmers to be too light for beans: however, the contrary is here sufficiently evident; for the produce of four quarters and an half yielding a clear profit of 4l. 5 s. upon a crop that is equal as a preparation for wheat to a fallow, are circumstances, it must be confessed by all, extremely brilliant. The common farmers very seldom exceed such a produce, even on better lands. This shews the giving the beans such a space to grow and branch in, with the repeated horse and hand-hoeings, are advantages that render an inferior soil superior. It was visible to every person who viewed these beans, that every stalk in the crop was kidded much lower than is ever seen in a broadcast field: for although very rich land will make the beans grow to a vast height, with stalks of a surprizing thickness, yet those stalks bear kids only in the middle: for eighteen inches from the ground, the produce is trifling, except in those plants that accidentally stand single, or surround the field; which shews, that the common way of sowing them is very inadequate to their nature.

I believe the farmers way of drilling beans is in equally distant rows, two feet asunder; in which method vast crops are gained, and the land sown after them with wheat, to great profit. I will not pretend to condemn any method untried; but I apprehend, upon soils no richer than mine, which having been run out of heart, require much favour, three feet a better distance. In two feet the plough can cut but one furrow at a time, which, in respect of reducing the soil, is a great objection: the invention of new implements, it is true, to work in two feet, might obviate it. Three feet admit a thorough tillage, and to a good depth; in-
somuch, that the land is left not only in good heart, but even well pulverized for wheat.

	£.	s.	d.
Reaping, - - - - -	0	0	9
Harvesting, - - - - -	0	0	1 $\frac{1}{2}$
Threshing, - - - - -	0	1	1
	<hr/>		
Rent, &c. - - - - -	0	6	5 $\frac{1}{4}$
	0	4	3
	<hr/>		
	0	10	8 $\frac{3}{4}$
	<hr/>		

P R O D U C E.

1 Quarter and half a peck at 32 s. - - - - -	1	12	6
Expences, - - - - -	0	10	8 $\frac{3}{4}$
	<hr/>		
Profit, - - - - -	1	1	9 $\frac{1}{4}$

	£.	s.	d.
Ploughing, - - - - -	0	0	6
Drilling, - - - - -	0	0	1 $\frac{1}{4}$
Horse hoeing, - - - - -	0	1	7 $\frac{1}{4}$
Carting, - - - - -	0	0	1 $\frac{1}{2}$
	<hr/>		
	0	2	4
	<hr/>		

Clear profit, 3 l. 17 s. 9 d. <i>per acre.</i> - - - - -	0	19	5 $\frac{1}{4}$
	<hr/>		

O B S E R V A T I O N S.

It should upon this trial be first observed, that the season to the common crops proved very unfavourable: that this drilled one escaped the general evil is evident, from the amount of the product, and the greatness of the profit. Four quarters *per acre* are a considerable produce, and not often exceeded by the common farmers with hand-hoeing, even on the best soils. This shews plainly enough that drilling is far preferable to broadcast sowing in the culture of this crop. Nine-tenths of common products of all sorts this year carried a most sickly aspect: I know nothing that on our soils stand such a season without damage, except wheat; for which crop we can scarcely have too dry a summer. Beans this year were mildewed, the leaves in general were all speckled, and the produce trifling. I experienced this on my own farm, and even on the same soil as this experiment; but no such symptoms appeared in the drilled

drilled crop: the plants were very healthy, and the product as above. This case I think very decisive in favour of this method of cultivating beans: the effect of the horse-hoeings must have occasioned such a superiority; nor am I surprized to find that it proved so. A profit of near 4l. *per* acre on a crop that in general turned out poorly, and on a soil which the common farmers think very improper for its production, every reader, I apprehend, will allow to be considerable: the immediate profit is great; equal, if not superior, to that of the best fields of *wheat* which this country produces. But this amount is by no means the only consideration: the grand object in cultivating beans ought to be, the substituting them in the place of a fallow. Now the drill-culture, as here practised, effects that important design in the most satisfactory manner possible. The above great crop and considerable profit is gained by sowing the rows at three feet asunder; a distance that admits as good a tillage as any summer fallow: which is a circumstance the cultivators of beans ought never to forget. Supposing two feet, or any other distance, will yield an equal, or even superior crop, it ought not therefore to be adopted, unless it is proved that the soil is left in as good order as by the three feet intervals: for I must again repeat, that the great consequence of beans is the being a fallow crop.

EXPERIMENT N° 3.

Culture, expences, and produce of half a rood, field L*, 1765.

CULTURE.

Yielded oats in 1764; the stubble ploughed on to the ridge in November, and the piece well water-furrowed. Ploughed and sowed by hand the end of February, spraining them before the plough, as in the preceding experiments, the rows three feet asunder, turning in at the same time three loads of rotten farm-yard dung. In June horse-hoed the rows, by turning a furrow with the common plough *from* the plants, then hand-hoed them well, and reversed the last horse-hoeing by a second. Hand-hoed again, twice horse-hoed, and cut the tops as before in July. Reaped the first week in September. Produce five bushels. Proportions *per* acre:

EXPENCES.

EXPENCES.

						£.	s.	d.
Two ploughings,	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	0	0	6
Manuring,	-	-	-	-	-	0	9	0
Drilling,	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	0	5	7
Four horse-hoeings,	-	-	-	-	-	0	4	0
Two hand-hoeings,	-	-	-	-	-	0	5	0
Cutting off the tops	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	0	3	0
Harvesting,	-	-	-	-	-	0	1	3
Threshing,	-	-	-	-	-	0	5	0
						<hr/>		
						1	17	10
Rent, &c.	-	-	-	-	-	0	17	0
						<hr/>		
						2	14	10

PRODUCE.

5 Quarters at 32 s.	-	-	-	-	-	8	0	0
Expences,	-	-	-	-	-	2	14	0
						<hr/>		
Profit,	-	-	-	-	-	5	6	0
						<hr/>		
					£.	s.	d.	
Ploughing,	-	-	-	-	0	2	0	
Drilling,	-	-	-	-	0	0	5	
Manuring,	-	-	-	-	0	9	0	
Horse-hoeing,	-	-	-	-	0	6	5	
Carting,	-	-	-	-	0	0	6 $\frac{1}{2}$	
					<hr/>			
						0	18	4 $\frac{1}{2}$
						<hr/>		
Clear profit,	-	-	-	-	-	4	7	7 $\frac{1}{2}$

OBSERVATIONS.

I do not apprehend the soil of this country will admit of more profitable husbandry (in corn or pulse) than this of reaping above four pounds clear from an acre of drilled and horse-hoed beans: considering that the culture is so beneficial a preparation for wheat. I know not what more a man can wish, or desire: instead of the expence of a fallow,

low, to clean and ameliorate his land as well for that crop as by the best summer tilts, and reap four pounds of profit; is a difference to which no farmer can be blind. Nor is the reader to forget, that this season has proved in general unfavourable to beans. And also that this soil is deemed by the common farmers, not strong enough for producing them. The contrary of which is however sufficiently evident.

EXPERIMENT N° 4.

Culture, expences, and produce of two acres in four divisions, field C*, 1766.

CULTURE.

This piece in 1759, yielded barley. In 1760, clover. In 1761, wheat. In 1762, fallow. In 1763, wheat. In 1764, fallow. In 1765, wheat.

The stubble was ploughed up in October, in various methods, and well water-furrowed: I purposed throwing the chief of this field, which is a large one, into experiments on beans; for the soil of it is reckoned much *stronger*, by the farmers than most of my other fields. March 7, ploughed these acres again, in four divisions, each half an acre: and drilled them in the following manner, with tick beans.

- N° 1. Common ridges a yard wide; one row on the top of each: three pecks of feed.
2. Four feet ridges; double rows on the top of each: three pecks of feed.
3. Four feet ridges; treble rows, at ten inches on the top of each: three pecks of feed.
4. Flat: equally distant rows two feet asunder: three pecks of feed.

All were equally water-furrowed. The beginning of June, the first horse-hoeing was given to all; to N° 1 and 2, a bout once in each interval, but to N° 3 and 4, only a single furrow at a time, the other some days after; the equality observed with no other difference than this necessary one of time. After this horse-hoeing; the rows were thoroughly hand-hoed, the soil well pulverised, and a vast number of weeds cut up and destroyed. The last week in the month, repeated the horse-hoeing, contrary to the last; the furrows being now thrown to the plants. The wetness of the season brought up fresh weeds, as fast as the old ones were destroyed, infomuch that I was obliged to give another hand-hoeing after this

this horse-hoeing, contrary to my general practice, which is to hand-hoe while the corn is left on slips, formed by horse-hoeing. In July two more horse-hoeings were given, and another hand-hoeing, and the tops of the beans cut off about eight inches from the ends. The wetness of the weather had made the weeds such formidable enemies, that less tillage than this would not have kept the land clean; as it was, more were to be found at harvest than, I think, should ever be suffered in the new husbandry; but they were principally in N° 3 and 4, which, from the narrowness of the intervals, would not admit such good culture as the others. Reaped them the middle of September. Produce as follows:

- N° 1. One quarter six bushels.
 2. Two quarters one peck.
 3. One quarter five bushels.
 4. One quarter five bushels.

Account of N° 1.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	4 $\frac{1}{2}$
Seed,	-	-	-	-	-	-	0	3	2 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	3
Four horse-hoeings,	-	-	-	-	-	-	0	2	0
Three hand-hoeings,	-	-	-	-	-	-	0	3	0
Cutting the tops,	-	-	-	-	-	-	0	1	3
Reaping,	-	-	-	-	-	-	0	1	9
Harvesting,	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	0	1	9
							0	15	6 $\frac{1}{2}$
Rent, &c.	-	-	-	-	-	-	0	8	6
							1	4	0 $\frac{1}{2}$

PRODUCE.

1 Quarter 6 bushels at 34 s.	-	-	-	-	-	-	2	19	6
Expences,	-	-	-	-	-	-	1	4	0 $\frac{1}{2}$
Profit,	-	-	-	-	-	-	1	15	5 $\frac{1}{2}$

	£.	s.	d.	
Ploughing, - - - - -	0	2	4 $\frac{3}{4}$	
Drilling, - - - - -	0	0	2 $\frac{1}{2}$	
Horse-hoeing, - - - - -	0	1	7 $\frac{1}{2}$	
Carting, - - - - -	0	0	3 $\frac{1}{4}$	
	<hr/>			0 4 6
Clear profit, 3 l. 1 s. 11 d. <i>per acre.</i>	-	-	-	<hr/> 1 10 11 $\frac{1}{2}$ <hr/>

Account of N^o 2.

EXPENCES.

	£.	s.	d.	
Two ploughings, - - - - -	0	1	0	
Water-furrowing, - - - - -	0	0	4 $\frac{1}{4}$	
Seed, - - - - -	0	3	2 $\frac{1}{4}$	
Drilling, - - - - -	0	0	2 $\frac{3}{4}$	
Four horse-hoeings, - - - - -	0	1	6	
Three hand-hoeings, - - - - -	0	4	6	
Cutting the tops, - - - - -	0	1	6	
Reaping, - - - - -	0	1	11	
Harvesting, - - - - -	0	1	0	
Threshing, - - - - -	0	2	1	
	<hr/>			0 17 3
Rent, &c. - - - - -	0	8	6	
	<hr/>			1 5 9

PRODUCE.

Two Quarters 1 peck at 34 s.	-	-	-	3 15 0 $\frac{3}{4}$
Expences, - - - - -	-	-	-	<hr/> 1 5 9 <hr/>
Profit, - - - - -	-	-	-	2 9 3 $\frac{1}{4}$
	£.	s.	d.	
Ploughing, - - - - -	0	2	4 $\frac{3}{4}$	
Drilling, - - - - -	0	0	1 $\frac{3}{4}$	
Horse-hoeing, - - - - -	0	2	5	
Carting, - - - - -	0	0	3 $\frac{1}{4}$	
	<hr/>			0 5 2 $\frac{3}{4}$
Clear profit, 4 l. 8 s. 2 d. <i>per acre.</i>	-	-	-	<hr/> 2 4 1 <hr/>
				Account

Account of N^o 3.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	4 $\frac{1}{4}$
Seed,	-	-	-	-	-	-	0	3	2 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	2 $\frac{1}{4}$
Four horse-hoeings,	-	-	-	-	-	-	0	1	6
Three hand-hoeings,	-	-	-	-	-	-	0	5	3
Cutting the tops,	-	-	-	-	-	-	0	1	9
Reaping,	-	-	-	-	-	-	0	2	2
Harvesting,	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	0	1	8
							0	18	1
Rent, &c.	-	-	-	-	-	-	0	8	6
							1	6	7

PRODUCE.

1 Quarter 5 bushels at 34 s.	-	-	-	-	-	2	15	3
Expences,	-	-	-	-	-	1	6	7
Profit,	-	-	-	-	-	1	8	6
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	2	4 $\frac{1}{4}$
Drilling,	-	-	-	-	-	0	0	1 $\frac{1}{4}$
Horse-hoeing,	-	-	-	-	-	0	2	5
Carting,	-	-	-	-	-	0	0	3 $\frac{1}{4}$
						0	5	2 $\frac{3}{4}$
Clear profit, 2 l. 6 s. 10 d $\frac{1}{2}$ d. per acre.	-	-	-	-	-	1	3	5 $\frac{1}{4}$

Account of N° 4.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	1	0
Water-furrowing,	0	0	4 $\frac{1}{2}$
Seed,	0	3	2 $\frac{1}{4}$
Drilling,	0	0	2 $\frac{1}{4}$
Four horse-hoeings,	0	3	0
Three hand-hoeings,	0	5	3
Cutting the tops,	0	1	6
Reaping,	0	2	0
Harvesting,	0	1	0
Threshing,	0	1	8
	<hr/>		
Rent, &c.	0	19	2
	0	8	6
	<hr/>		
	1	7	8

PRODUCE.

1 Quarter 5 bushels at 34 s.	2	15	3
Expences,	1	7	8
Profit,	1	7	7
	<hr/>		
	£.	s.	d.
Ploughing,	0	2	4 $\frac{3}{4}$
Drilling,	0	0	1 $\frac{3}{4}$
Horse-hoeing,	0	4	10 $\frac{1}{2}$
Carting,	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	7	8 $\frac{1}{4}$
	<hr/>		
Clear profit, 1 l. 19 s. 9 $\frac{1}{2}$ d. per acre.	0	19	10 $\frac{3}{4}$
	<hr/>		

COMPARISON.

COMPARISON.

				£.	s.	d.
Profit on 2 rows on 4 feet ridges,	-	-	-	4	8	2
Ditto on equally distant 3 feet,	-	-	-	3	1	11
Superiority of the former,	-	-	-	1	6	3
Profit by 2 rows on 4 feet ridges,	-	-	-	4	8	2
Ditto by 3 rows on 4 feet ridges,	-	-	-	2	6	10½
Superiority of the former,	-	-	-	2	1	3½
Profit by 2 rows on 4 feet ridges,	-	-	-	4	8	2
Ditto by equally distant 2 feet,	-	-	-	1	19	9½
Superiority of the former,	-	-	-	2	8	4½
Profit on equally distant rows 3 feet,	-	-	-	3	1	11
Ditto on 3 rows on 4 feet ridges,	-	-	-	2	6	10½
Superiority of the former,	-	-	-	0	15	0½
Profit by equally distant rows 3 feet,	-	-	-	3	1	11
Ditto by ditto 2 feet,	-	-	-	1	19	9½
Superiority of the former,	-	-	-	1	2	1½
Profit by 3 rows on 4 feet ridges,	-	-	-	2	6	10½
Ditto by equally distant 2 feet,	-	-	-	1	19	9½
Superiority of the former,	-	-	-	0	7	1

But as there are many variations in the expences, I shall also give the progression of produce *per* acre.

Nº			Q.	B.	P.			£.	s.	d.
2.	-	-	4	0	2	-	-	7	10	1½
1.	-	-	3	4	0	-	-	5	19	0
3. }	-	-	3	2	0	-	-	5	10	6
4. }	-	-				-	-			

OBSERV.

OBSERVATIONS.

Upon this trial it is in the first place to be remarked, that all the four methods of drilling are very profitable, and unite strongly to prove the great importance of this culture for beans. Part of the field was under a broadcast crop for a particular comparison between the two modes; but all these four crops far exceeded it. I had this year many drilled crops of all sorts in several of my fields, but none of them were comparable to those of beans; which evidently carry, in the drill culture, a far greater superiority than any other sort of grain or pulse; this is to be attributed to the strength of the stalks. The rows of beans, if at a proper distance, may be horse-hoed as often and as deep as you please; but this is very different with wheat, barley, oats, and pease, all which presently shut out the hoe plough. Beans, from this difference, answer so greatly in drilling, that I cannot but recommend the culture to all farmers; I will venture to assure them, were it only from the result of the present experiment, that they will find it infinitely more advantageous than the most improved of the common methods.

By drilling in double rows, on four feet ridges, here is a clear profit of above 4l. *per* acre: now let the common farmer consider well before he pronounces that broadcast sowing, ridge furrowing, or any such methods will equal this. It is true the soil of this field is well adapted, according to their notions, for beans, but so likewise are their own fields; for they never sow any but their strongest with this crop: they bestow two hand-hoeings at a large expence, and cultivate the crop better than is usual with them; and yet I will venture to assert, that they very seldom reap such crops as this.

Four pounds *per* acre is nearer the *produce*, than the *profit*, even of good wheat crops; what a beneficial husbandry must it therefore be to gain such an amount from the *fallow* year? That year, which in most of the common husbandry in England, is a year of expence alone. The preparation in this method of drilling undoubtedly is equal to most fallows, and superior to many. If by a fallow is understood the beginning a summer tilth in May or June, the land under stubble till then; any one who really understands the matter cannot but allow, that such a bean crop as this must far exceed it, in every requisite of a fallow. Four pounds *per* acre are gained therefore, at the same time that the land receives a very fine preparation for wheat.

Respecting

Respecting the comparison of the several methods, there is a much greater difference between some of them than I could have conceived. That of 2 l. 1 s. 3½ d. *per* acre, between two and three rows, on four feet ridges, is the variation; however much of it is owing to a difference of expence: that of quantity of produce is only six bushels, which may certainly vary between two such modes. Adding a row raises the expence of culture much, and diminishes the produce by six bushels; which, together, amounts to 2 l. 1 s. 3½ d. But I should have apprehended, nevertheless, that the addition of a third row, would at least have equalled the produce of two, however expence might increase; but the fact is plainly otherwise; it is a point which demands a further attention, and it shall have it. The difference likewise of 2 l. 8 s. between double rows on four feet ridges, and equally distant ones at two feet, surprizes me much; the land is in each way cropped the same, that is a row to every two feet of ground; the variation of profit is therefore prodigious: it would be absurd to reason against facts, but yet I am myself so far in doubt concerning the *general* ballance between these two methods, that I am determined to try the same comparison every year, until the point is absolutely clear; it is however to be observed in this case, as well as the last, that the difference in produce is only six bushels, the rest is in the expences.

But whatever may be one's opinion concerning the degree of the comparative methods of drilling during a term of years, yet it is sufficiently clear, that double rows, on four feet ridges, are more beneficial than any of the other modes, whatever may be the degree of superiority, this general result will, I doubt not, be proved decisively.

But a further circumstance, which must here be considered, is the state of the field after these crops; in this respect, the benefit is nearly in proportion to the space for horse-hoeing, 'till you extend it to such a distance as to exclude the benefit of the shade of the beams. Of the distances in question, the double rows on four feet ridges, and the single rows equally distant three feet, are equal in the perfection of tillage bestowed in the interval; and in these the state of the soil, after the crop, much exceeded the treble rows, and also the equally distant two feet: for although the same hoeings were give to all, and at the same expence, yet the effect was extremely different. It is impossible to pulverize (at least with my instruments) a space of two feet equally with one of three: for but one furrow can be turned at a time in the former; the plough turns a furrow from the plants of one row, the mould of which furrow falls so near the opposite row, that in the second cut they are thrown back again, not left in the middle, as in a three feet interval.

The

The consequence of this is, the second furrow not being cut near so deep as the first: for the plough has not only the earth of its own furrow to move, but also part of that of the first; which is a great deduction from the pulverization effected by this method of horse-hoeing, and I think explains, in some measure, the crop in one case being so much better than in the other. I have had in contemplation the making a plough so narrow in the *ground* and *tail*, as to work in two feet as well as my common one does in three; but I have not hitherto executed the idea. I have a single cultivator, the idea of which I borrowed from M. de Chateaufieux; but the effect of its operation is not comparable to that of the common plough. Upon the whole, the three feet intervals will, I apprehend, be found in most cases to yield the largest crops of beans, and also to prepare the land the best for wheat. This is strongly the effect of the present experiment.

EXPERIMENT N^o 5.

Culture, expences, and produce of a rood, field L*, 1766.

C U L T U R E.

Yielded horse-hoed wheat, in 1765, treble rows, on five feet ridges: in October reversed those ridges: the first week in March arched them up by a second ploughing, turning in four loads of compost, consisting of equal parts of rotten horse and hog dung, bought at Bury; and drilled each with three rows of tick-beans, at one foot asunder, using two pecks of seed; the intervals consequently three feet wide. In June horse-hoed and hand-hoed them twice. In July gave two more horse-hoeings and another hand-hoeing, and also cut off the tops of the beans. No crop could carry a finer appearance than this. The preceding horse-hoed ones had brought the land into excellent order, so that the manure could not fail of taking full effect: this was visible in the fine appearance the beans made, which much exceeded that of common crops. Reaped them in September. The produce one quarter six bushels.

E X P E N C E S.

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	0	6
Water-furrowing, - - - - -	0	0	3
Manuring, - - - - -	0	11	5
Drilling, - - - - -	0	0	0 $\frac{1}{4}$
Seed, - - - - -	0	2	1 $\frac{1}{2}$
Four horse-hoeings, - - - - -	0	0	8
Three hand-hoeings, - - - - -	0	1	9
Cutting the tops, - - - - -	0	0	9
Reaping, - - - - -	0	1	3
Harvesting, - - - - -	0	0	6
Threshing, - - - - -	0	1	9
	<hr/>		
Rent, &c. - - - - -	1	1	0 $\frac{1}{4}$
	0	4	3
	<hr/>		
	1	5	3 $\frac{1}{4}$

PRODUCE.

1 Quarter 6 bushels at 34s. - - - - -	2	19	6
Expences, - - - - -	1	5	3 $\frac{1}{4}$
Profit, - - - - -	1	14	2 $\frac{1}{4}$

	£.	s.	d.
Ploughing, - - - - -	0	1	2 $\frac{1}{4}$
Manuring, - - - - -	0	15	1 $\frac{1}{2}$
Drilling, - - - - -	0	0	0 $\frac{3}{4}$
Horse-hoeing, - - - - -	0	1	0
Carting, - - - - -	0	0	1 $\frac{1}{2}$
	<hr/>		
	0	17	6

Clear profit, 3 l. 6 s. 11 d. <i>per acre.</i> - - - - -	0	16	8 $\frac{3}{4}$
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OBSERVATIONS.

This crop is, I think, a very extraordinary one. It amounts to seven quarters *per* acre: that is a much greater produce than the common farmers ever gain in this neighbourhood; nor do I think that any common management, under equal circumstances of soil and manuring, will ever equal this produce. It shews the consequence of the horse-hoeing culture to beans, which, beyond all doubt, far exceeds any other mode. A profit of 3l. 6s. *per* acre, after paying rent and all expences, including that of a rich manuring, is such as exceeds every thing in the old husbandry on no better soils: and when it is considered that this great profit is gained by a fallow crop that prepares excellently for wheat, sure no man, however prejudiced against the drill husbandry, can review such facts without being convinced of its importance in the culture of beans! Three feet intervals are broad enough to admit excellent tillage, so that all weeds are thoroughly destroyed, and the land left in admirable order. This is one benefit of laying the manure on hoeing crops: for when and wheresoever laid, it will infallibly produce abundance of weeds; consequently with hoeing crops they are again destroyed: but when the manure is laid on the wheat lands, it brings up the weeds equally, without a possibility of their being destroyed: the result of which must be, filling the soil with them. By manuring the beans, and succeeding them by wheat, the latter has a very great benefit of the manure, without being damaged by the attending weeds. Upon the whole, this experiment proves, in a very clear manner, that the horse-hoeing culture of beans is extremely advantageous in yielding a great profit, after paying for an expensive manuring, and at the same time preparing the land excellently for wheat.

EXPERIMENT N° 6.

Culture, expences, and produce of two acres and an half, in five divisions, field S, 1767.

CULTURE.

This piece was cropped with tares in 1766; the stubble ploughed in November on to various ridges. The 12th of March ploughed it again in five divisions, and drilled them in the following manner with tick-beans.

N° 1.

- N^o 1. Common ridges a yard wide, one row on the top of each : three pecks of seed.
2. Flat, equally distant rows, two feet asunder : three pecks of seed.
3. Four feet ridges, double rows at the top of each : three pecks of seed.
4. Four feet ridges, treble row at ten inches on the top of each : three pecks of seed.
5. Five feet ridges, three rows at one foot on the top of each : three pecks of seed.

They were all well, and equally water-furrowed. The first attention was that of horse-hoeing, which was twice performed in June : a furrow turned from the rows of each, which was reversed by the second : between them a hand-hoeing was given, which was highly necessary, from the vast number of weeds that perpetually sprouted up, owing to the wetness of the season. The frequent rains continuing, this operation was forced to be repeated after the second horse-hoeing. In July, as soon as the beans began to blossom, I sent in men to cut off all the tops, which, from the most attentive observation I have been able to make, I am convinced is very requisite to a good crop. In the same month gave two more horse-hoeings, the last of which left the ridges in their first form ; likewise another hand-hoeing. All these crops were by these means kept perfectly clean and in good order, notwithstanding the almost perpetual rains which fell throughout the summer. It was the beginning of October before the crop was ready to reap. The products as follow :

- N^o 1. One quarter and three bushels.
2. One quarter and a peck.
3. One quarter and seven bushels.
4. One quarter six bushels.
5. Two quarters four bushels.

Account of N^o 1.

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	1	0
Water-furrowing, - - - - -	0	0	4
Drilling, - - - - -	0	0	3
Seed, - - - - -	0	3	2 $\frac{1}{4}$
Four horse-hoeings, - - - - -	0	2	0
Three hand-hoeings, - - - - -	0	2	0
Cutting the tops, - - - - -	0	1	0
Reaping, - - - - -	0	2	0
Harvesting, - - - - -	0	0	9
Threshing, - - - - -	0	1	4 $\frac{3}{4}$
	<hr/>		
	0	13	10 $\frac{3}{4}$
Rent, &c. - - - - -	0	8	6
	<hr/>		
	1	2	4 $\frac{3}{4}$
	<hr/>		

PRODUCE.

1 Quarter and 3 bushels, at 34 s. - - - - -	2	6	9
Expences, - - - - -	1	2	4 $\frac{1}{4}$
	<hr/>		
Profit, - - - - -	1	4	4 $\frac{1}{4}$
	<hr/>		
	£.	s.	d.
Ploughing, - - - - -	0	2	5 $\frac{1}{4}$
Drilling, - - - - -	0	0	2 $\frac{1}{2}$
Horse-hoeing, - - - - -	0	3	3
Carting, - - - - -	0	0	3 $\frac{3}{4}$
	<hr/>		
	0	6	2
	<hr/>		
Clear profit, 1l. 16s. 4 $\frac{1}{2}$ d. per acre. - - - - -	0	18	2 $\frac{3}{4}$
	<hr/>		

Account

Account of N^o 2.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	0	0	2 $\frac{1}{4}$
Seed,	-	-	-	-	-	-	0	3	2 $\frac{1}{4}$
Four horse-hoeings,	-	-	-	-	-	-	0	3	0
Three hand-hoeings,	-	-	-	-	-	-	0	3	6
Cutting the tops,	-	-	-	-	-	-	0	1	6
Reaping,	-	-	-	-	-	-	0	2	0
Harvesting,	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	0	1	1
							<hr/>		
Rent,	-	-	-	-	-	-	0	16	6 $\frac{1}{2}$
							0	8	6
							<hr/>		
							1	5	0 $\frac{1}{2}$
							<hr/>		

PRODUCE.

1 Quarter and 1 peck at 34 s.	-	-	-	-	-	-	1	15	0 $\frac{3}{4}$
Expences,	-	-	-	-	-	-	1	5	0 $\frac{1}{2}$
							<hr/>		
Profit,	-	-	-	-	-	-	0	10	0 $\frac{1}{4}$
							<hr/>		
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	5 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Horse-hoeing,	-	-	-	-	-	-	0	4	10 $\frac{1}{4}$
Carting,	-	-	-	-	-	-	0	0	3 $\frac{1}{2}$
							<hr/>		
							0	7	8 $\frac{1}{2}$
							<hr/>		
Clear profit, 4 s. 7 $\frac{1}{2}$ d. per acre,	-	-	-	-	-	-	0	2	3 $\frac{3}{4}$
							<hr/>		

Account

Account of N^o 3.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	0	0	2 $\frac{1}{4}$
Seed,	-	-	-	-	-	-	0	3	2 $\frac{1}{4}$
Four horse-hoeings,	-	-	-	-	-	-	0	1	6
Three hand hoeings,	-	-	-	-	-	-	0	3	9
Cutting the tops,	-	-	-	-	-	-	0	1	9
Reaping,	-	-	-	-	-	-	0	1	9
Harvesting,	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	0	1	10 $\frac{1}{2}$
							0	16	1
Rent, &c.	-	-	-	-	-	-	0	8	6
							1	4	7

PRODUCE.

1 Quarter and 7 Bushels, at 34 s.	-	-	-	-	-	-	3	3	9
Expences,	-	-	-	-	-	-	1	4	7
Profit,	-	-	-	-	-	-	1	19	2
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	5 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{3}{4}$
Horse-hoeing,	-	-	-	-	-	-	0	3	5
Carting,	-	-	-	-	-	-	0	0	3 $\frac{1}{4}$
							0	6	3 $\frac{1}{4}$
Clear profit, 3 l. 5 s. 9 $\frac{1}{2}$ d. per acre,	-	-	-	-	-	-	1	12	10 $\frac{3}{4}$

Account

Account of N^o 4.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	1	0
Water-furrowing,	0	0	4
Drilling,	0	0	2 $\frac{1}{4}$
Seed,	0	3	2 $\frac{1}{4}$
Four horse-hoeings,	0	1	6
Three hand-hoeings,	0	4	3
Cutting the tops,	0	2	0
Reaping,	0	2	0
Harvesting,	0	0	9
Threshing,	0	1	9
	0	16	11 $\frac{1}{2}$
Rent, &c.	0	8	6
	1	5	5 $\frac{1}{2}$

PRODUCE.

1 Quarter and 6 bushels at 34 s.	2	19	6
Expences,	1	5	5 $\frac{1}{2}$
Profit,	1	14	0 $\frac{1}{2}$
	£.	s.	d.
Ploughing,	0	2	5 $\frac{1}{4}$
Drilling,	0	0	1 $\frac{3}{4}$
Horse-hoeing,	0	3	5
Carting,	0	0	3 $\frac{1}{4}$
	0	6	3 $\frac{1}{4}$
Clear profit, 2 l. 15 s. 6 $\frac{1}{2}$ d. per acre,	1	7	9 $\frac{1}{4}$

Account

Account of N^o 5.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	4
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{3}{4}$
Seed,	-	-	-	-	-	-	0	3	2 $\frac{1}{4}$
Four horse hoeings,	-	-	-	-	-	-	0	1	4
Three hand-hoeings,	-	-	-	-	-	-	0	4	0
Cutting the tops,	-	-	-	-	-	-	0	1	9
Reaping,	-	-	-	-	-	-	0	2	0
Harvesting,	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	0	2	6
							<hr/>		
Rent, &c.	-	-	-	-	-	-	0	17	0
							0	8	6
							<hr/>		
							1	5	6
							<hr/>		

PRODUCE.

2 Quarters 4 bushels, at 34 s.	-	-	-	-	-	4	5	0
Expences,	-	-	-	-	-	1	5	6
						<hr/>		
Profit,	-	-	-	-	-	2	19	6
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	2	5 $\frac{1}{4}$
Drilling,	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Horse-hoeing,	-	-	-	-	-	0	2	0
Carting,	-	-	-	-	-	0	0	3 $\frac{1}{4}$
						<hr/>		
						0	4	10
						<hr/>		
Clear profit, 5 l. 9 s. 4 d. <i>per</i> acre,	-	-	-	-	-	2	14	8
						<hr/>		

COMPARISON.

COMPARISON.

				£.	s.	d.
Profit from three rows on five feet ridges,	-	-		5	9	4
Ditto from two rows on four feet ridges,	-	-		3	5	9 $\frac{1}{2}$
Superiority of the former,	-	-		2	3	6 $\frac{1}{2}$
Profit from three rows on five feet ridges,	-	-		5	9	4
Ditto three rows on four feet ridges,	-	-		2	15	6 $\frac{1}{2}$
Superiority of the former,	-	-		2	13	9 $\frac{1}{2}$
Profit from three rows on five feet ridges,	-	-		5	9	4
Ditto on equally distant rows, three feet afunder,	-	-		1	16	4 $\frac{1}{2}$
Superiority of the former,	-	-		3	12	11 $\frac{1}{2}$
Profit from three rows on five feet ridges,	-	-		5	9	4
Ditto from equally distant rows two feet,	-	-		0	4	7 $\frac{1}{2}$
Superiority of the former,	-	-		5	4	8 $\frac{1}{2}$
Profit from two rows on four feet ridges,	-	-		3	5	9 $\frac{1}{2}$
Ditto from three rows on four feet ridges,	-	-		2	15	6 $\frac{1}{2}$
Superiority of the former,	-	-		0	10	3
Profit from two rows on four feet ridges,	-	-		3	5	9 $\frac{1}{2}$
Ditto from equally distant rows three feet,	-	-		1	16	4 $\frac{1}{2}$
Superiority of the former,	-	-		1	9	5
Profit from two rows on four feet ridges,	-	-		3	5	9 $\frac{1}{2}$
Ditto from equally distant rows two feet,	-	-		0	4	7 $\frac{1}{2}$
Superiority of the former,	-	-		3	1	2
Profit from three rows on four feet ridges,	-	-		2	15	6 $\frac{1}{2}$
Ditto from equally distant three feet,	-	-		0	16	4 $\frac{1}{2}$
Superiority of the former,	-	-		0	19	2

				£.	s.	d.
Profit from 3 rows, on 4 feet ridges.	-	-	-	2	15	6 $\frac{1}{2}$
Ditto from equally distant, 2 feet,	-	-	-	0	4	7 $\frac{1}{2}$
Superiority of the former,	-	-	-	2	10	11
Profit from equally distant, 3 feet,	-	-	-	1	16	4 $\frac{1}{2}$
Ditto from ditto, 2 feet,	-	-	-	0	4	7 $\frac{1}{2}$
Superiority of the former,	-	-	-	1	11	9

The comparison of the products is as follows :

				Q.	B.	P.			£.	s.	d.
N ^o 5.	-	-	-	5	0	0	-	-	8	10	0
3.	-	-	-	3	6	0	-	-	6	7	6
4.	-	-	-	3	4	0	-	-	5	19	0
1.	-	-	-	2	6	0	-	-	4	13	6
2.	-	-	-	2	0	2	-	-	3	10	1 $\frac{1}{2}$

OBSERVATIONS.

This year was remarkably wet, so that the weeds were brought up by the rains almost as quickly as they were destroyed ; but notwithstanding the expensive tillage and cleaning bestowed on all these crops, yet the profit is extremely great, even upon the worst of all the modes : this is a strong proof of the amazing benefits of the horse-hoeing culture to beans. The better methods yield a profit which is scarce ever equalled in any other husbandry : not one acre of wheat in twenty equals these crops, so that the fallow year in this husbandry is more profitable than that of the exhausting crop.

Respecting the comparison of the different methods of drilling, I can merely offer the particulars ; but I cannot reason upon them : the variations are much greater than I should have conceived : three rows on five feet ridges are evidently superior to any other method.

And I shall accordingly venture to recommend that practice to other cultivators ; as it not only yields this great superiority of product, but likewise admits such complete tillage of the intervals, that the crop cannot fail of being an admirable preparation for wheat : this is a circumstance never to be forgotten, for that mode of culture which allows of the best preparation without damaging the bean crop, certainly is to be preferred.

GENERAL

GENERAL OBSERVATIONS on these EXPERIMENTS.

The trials which I have now the pleasure of laying before the reader, are such as I flatter myself will meet with approbation: they give me a peculiar satisfaction, for all my endeavours to render the new husbandry advantageous have proved unsuccessful in most other crops; so that in beans I think I have made some conquest: those writers who in very warm terms indiscriminately praise it for the culture of every kind of grain, pulse, and roots, carry so many marks of prejudice in their works, that one cannot help suspecting the accuracy or impartiality of their accounts. But I will venture to assure the reader, that no man could enter on the practice of drilling more impartially than myself: I had pre-conceived nothing concerning the event; the result either for or against it, could give me no peculiar pleasure, for both were indifferent to me; I had built no hypothesis which I wished to support by experiment, but throughout the whole of my little experience, never had a motive for swerving from the directest line of impartiality. I have more than once had occasion warmly to condemn the horse-hoeing husbandry, I have now an opportunity of praising it with equal warmth: this is the event of farming experiments; a man must praise one moment a method which he condemned another: small variations in circumstances occasion great ones in effects: this is fatal to the vanity of those who wish to erect systems, but it is the plain road to philosophical precision: the following tables will bring the preceding trials into a single view.

EXPENCES.

								£.	s.	d.
N ^o 1.	-	-	-	-	-	-	-	2	9	9
2.	-	-	-	-	-	-	-	2	12	3
3.	-	-	-	-	-	-	-	3	13	2 $\frac{1}{2}$
4.	-	1.	-	-	-	-	-	2	17	1
		2.	-	-	-	-	-	1	10	1 $\frac{3}{4}$
		3.	-	-	-	-	-	1	11	9 $\frac{3}{4}$
		4.	-	-	-	-	-	1	15	4 $\frac{1}{4}$
5.	-	-	-	-	-	-	-	8	11	1
6.	-	1.	-	-	-	-	-	2	0	1 $\frac{1}{2}$
		2.	-	-	-	-	-	3	5	6

D d d 2

3.

P U L S E.

Book II.

			£.	s.	d.
	3.	-	3	1	8 $\frac{1}{2}$
	4.	-	3	3	5 $\frac{1}{2}$
	5.	-	3	0	8
Total	-	-	39	12	11 $\frac{3}{4}$

Average, 3 l. 0 s. 11 d.

P R O D U C E.

N ^o				Q.	B.	P.
1.	-	-	-	4	4	0
2.	-	-	-	4	0	2
3.	-	-	-	5	0	0
4.	-	1.	-	3	4	0
		2.	-	4	0	2
		3.	-	3	2	0
		4.	-	3	2	0
5.	-	-	-	7	0	0
6.	-	1.	-	2	6	0
		2.	-	2	0	2
		3.	-	3	6	0
		4.	-	3	4	0
		5.	-	5	0	0
Total,	-	-	-	51	5	2

Average, 3 quarters 7 bushels 3 pecks.

P R O F I T.

N ^o				£.	s.	d.
1.	-	-	-	4	5	3
2.	-	-	-	3	17	9
3.	-	-	-	4	7	7 $\frac{1}{2}$
4.	-	1.	-	3	1	11
		2.	-	4	8	2
		3.	-	2	6	10 $\frac{1}{2}$
		4.	-	1	19	9 $\frac{1}{2}$
5.	-	-	-	3	6	11
6.	-	1.	-	1	16	4 $\frac{1}{2}$
		2.	-	0	4	7 $\frac{1}{2}$
						3.

	£.	s.	d.
3.	3	5	9½
4.	2	15	6½
5.	5	9	4
	41	5	11½

Average, 3 l. 3 s. 6 d.

These little tables offer matter for reflection. We find upon an average of thirteen crops, in various seasons, that drilled and horse-hoed beans will yield a produce of three quarters seven bushels and three pecks, and that the expences are low enough to leave out of this produce a profit to the farmer of 3 l. 3 s. 6 d. This plain state of the fact is so highly in favour of drilling, so clear and indisputable, that I think nothing but a blind prejudice can keep the more spirited sort of cultivators from entering largely into the practice.

Had the writers who have been so warm in the praise of the new husbandry, published all their experiments, to shew the world the plain facts, the trials I am at present registering would have been unnecessary; but as too many of those gentlemen from some successful trials (probably on beans or some other vegetable well adapted to the mode) have entered largely into a general commendation of the method, almost exclusively of the old husbandry, one is forced to be more confined and cautious in general observations: many of these wholesale dealers in praise have been as lavish of their commendations of drilled wheat, barley, oats, as of drilled beans: so that the general turn of praise or censure is *it is execrable*; or *it is admirable*. One cannot condemn drilling for one plant, but you are at once concluded an enemy to the whole: and from one article of praise supposed an advocate for it in every thing.

My experiments have turned out very differently; the drill culture for beans I have found to merit all the praise that can possibly be given to it: for wheat and pease the success has been much inferior, and even dubious: for barley and oats, utterly nought. How therefore can any man talk of the drill culture in general? He must particularize his ideas, or he must speak at random.

The excellence of it for beans is proved in these trials; which are so very successful that, relative to my own future practice, I consider them as absolutely decisive, and shall accordingly never have another acre broadcast, unless experimentally. A profit clear, of three guineas *per* acre on a fallow crop that prepares so well for wheat or spring corn, is what I may be allowed to call perfection in this walk of husbandry, at least

least on my land; for the reader should consider that most of the fields of this farm are by no means that strong rich clay that farmers prefer for beans, but on the contrary, a loamy thick earth, out of heart, and none of it rich. If these crops are compared even with those of common farmers on much richer soils, doubtless they will be exceeded: crops of from seven to ten quarters have been gained even within seven miles of this place, at Lavenham; but then one acre of their land is as good as three of mine, and the farmers at the same time excellent good ones. The above profit from drilled beans much exceeds that of my common wheat crops, or the general ones of the country: does it not therefore greatly behove the cultivators of such soils to introduce beans as often as possible? but the difference between a profit from an exhausting or an ameliorating crop is very great: wheat both from the nature of the plant, and the impossibility of profitably giving it a good culture while growing, greatly damages the land, in diminishing its fertility, and filling it with weeds: but beans with proper intervals receive so complete a culture that every part of the soil is kept like a well ordered fallow without a weed to be met with, this added to the nature of the vegetable, which being leguminous, by no means exhausts like corn, renders the profit of 3 l. 3 s. 6 d. an acre, from these soils infinitely greater than what we can get from wheat. A division should be made as follows. of manured and unmanured.

M A N U R E D.

EXPENCES.

								£.	s.	d.
N ^o 3.	-	-	-	-	-	-	-	3	13	2 ¹ / ₂
5.	-	-	-	-	-	-	-	8	11	1
								<hr/>		
								12	4	3 ¹ / ₂

Average, 6 l. 2 s. 1¹/₄ d.

PRODUCE.

								Q.	B.	P.
N ^o 3.	-	-	-	-	-	-	-	5	0	0
5.	-	-	-	-	-	-	-	7	0	0
								<hr/>		
								12	0	0

Average, 6 quarters.

PRO-

							£.	s.	d.
N ^o 3.	-	-	-	-	-	-	4	7	7 $\frac{1}{2}$
5.	-	-	-	-	-	-	3	6	11
							<hr/>		
							7	14	6 $\frac{1}{2}$
							<hr/>		

Average, 3l. 17s. 3 $\frac{1}{4}$ d.

This account is much worthy of attention: beans evidently pay well for an expensive manuring: one of these crops raised at the expence of 8l. 11s. *per* acre, and the average at 6l. 2s. are very expensively cultivated, but the produce bears so advantageous a proportion that the crop bears a great profit. Let it be considered well, and this husbandry I am confident will appear to demand more attention than the farmers have yet given it: the soil is manured most amply; and planted with a crop in rows, that admits such excellent culture as to reduce the land like a fallow: such operations kill all the weeds, an object, immediately after manuring, of infinite importance: this crop pays rent, all expences of manuring, tillage, and cleaning; and leaves a clear profit of 3l 17s. 3 $\frac{1}{4}$ d. *per* acre. The land is left exceedingly rich, and perfectly clean; an advantageous crop of wheat undoubted. This is a course of husbandry which I will warrant to prove highly advantageous to whoever will engage in it; and render the old custom of fallowing, unless in particular cases, not only useless, but highly unprofitable.

U N M A N U R E D.

EXPENCES.

							£.	s.	d.
Total,	-	-	-	-	-	-	39	12	11 $\frac{3}{4}$
Manured,	-	-	-	-	-	-	12	4	3 $\frac{1}{2}$
							<hr/>		
							27	8	8 $\frac{1}{4}$
							<hr/>		

Average, 2l. 9s. 10 $\frac{1}{2}$ d.

P R O D U C E.

							Q.	B.	P.
Total,	-	-	-	-	-	-	51	5	2
Manured,	-	-	-	-	-	-	12	0	0
							<hr/>		
							39	5	2
							<hr/>		

Average, 3 quarters 4 bushels; 3 pecks.

PRO-

P R O F I T.

	£.	s.	d.
Total,	41	5	11½
Manured,	7	14	6½
	33	11	5

Average, 3 l. 1 s. 0¼ d.

Here we find that this culture of beans however profitable with manuring, yet does not depend on it ; the average profit of 3 l. is very high ; much higher than wheat amounts to in this country, which certainly forms an object of very great importance to the industrious husbandman.

Before I dismiss this subject I cannot but remark the amazing difference between the drill and horse-hoeing culture of beans ; and the management of those counties where they sow them the last crop of the course ; never hoe ; and summer fallow the land after them : their crops are paltry and their soil filled with weeds : whereas the best culture of beans admit of two courses, both excellent, 1. drilled beans, 2. wheat, 3. drilled beans, 4. wheat, and so on perpetually : and this is the bean husbandry to be recommended on very rich, or strong lands. Secondly, 1. drilled beans, 2. barley, 3. clover, 4. wheat, 5. drilled beans, and so on : this course would be preferable on soils inferior to the others. Far different are these courses from the execrable husbandry of the mistaken counties I mention.

In respect to distance of rows : 3 rows on 5 feet ridges : and 2 rows on 4 foot ones, are preferable to all others. Next equally distant at 3 feet.

S E C T. III.

COMPARISON of the OLD and NEW METHODS.

IN such a series of experiments as I here venture to the eye of the world, it is not sufficient to prove that the new husbandry, in the culture of any vegetable, is good or bad; it is further necessary to shew in what degree it is either, on comparison with the methods heretofore in use. This ought to be one of the principal objects in such experiments. In the present article of beans this attention is particularly necessary; for both methods have many and undoubted advantages. There are many countries that would find it difficult even to pay rent without the assistance of their bean crops in common management: and it is supposed that the new method exceeds the old in produce and profit; a circumstance that seems much corroborated by its being practiced by many common farmers. The comparison of these methods engaged, therefore, much of my attention, that I might be able to ascertain which of them was really the most profitable.

EXPERIMENT N° I.

Culture, expences, and produce of a rood, in two divisions, field L*, 1764.

CULTURE.

This piece received the first tillage in October 1763; when it was ploughed on to the ridge. The beginning of March ploughed it again, sowing one half with a peck of horse-beans broadcast, turned in by shutting up the balks in the ploughing: sown in three-fourths of a peck on the other half, so as to rise in single rows one on the top of each ridge. As soon as the plants were six inches high, hand-hoed the

broadcast half, and horse-hoed the other, by turning a furrow from the rows, leaving them upon a narrow slip of earth, and then hand-hoed that slip, cutting up the beans where they grew too thick. The horse-hoeing was repeated before the month of June expired, and also the hand-hoeing of the broadcast part. In July two more horse-hoeings were given, and one hand-hoeing, also a slight weeding to the broadcast. Both were reaped together in September. Produce of the broadcast, two bushels and one peck; of the drilled, four bushels.

Account of the BROADCAST.

EXPENCES.

						£.	s.	d.
Two ploughings,	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	0	0	6
Sowing,	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	0	6	0
Twice hand-hoeing,	-	-	-	-	-	0	9	0
Once weeding,	-	-	-	-	-	0	1	6
Reaping,	-	-	-	-	-	0	5	0
Harvesting,	-	-	-	-	-	0	2	0
Threshing,	-	-	-	-	-	0	2	3
						1	8	6
Rent, &c.	-	-	-	-	-	0	17	0
						2	5	6

PRODUCE.

18 Bushels at 32 s.	-	-	-	-	-	3	12	0
Expences,	-	-	-	-	-	2	5	6
Profit,	-	-	-	-	-	1	6	6

						£.	s.	d.
Ploughing,	-	-	-	-	-	0	3	0
Carting,	-	-	-	-	-	0	0	3 $\frac{1}{4}$
						0	3	3 $\frac{1}{4}$
Clear profit,	-	-	-	-	-	1	3	2 $\frac{1}{4}$

DRILLED.

DRILLED.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Water-furrowing,	0	0	6
Drilling,	0	0	6
Seed,	0	4	6
Four horse-hoeings,	0	4	0
Two hand-hoeings,	0	4	9
Reaping,	0	3	6
Harvesting,	0	1	0
Threshing,	0	4	0
	<hr/>		
	1	4	9
Rent, &c.	0	17	0
	<hr/>		
	2	1	9

PRODUCE.

4 Quarters at 32 s.	6	8	0
Expences,	2	1	9
	<hr/>		
Profit,	4	6	3
	<hr/>		
	£.	s.	d.
Ploughing,	0	3	0
Drilling,	0	0	2 $\frac{1}{4}$
Horse-hoeing,	0	2	8
Carting,	0	0	3 $\frac{3}{4}$
	<hr/>		
	0	6	2 $\frac{1}{4}$
	<hr/>		
Clear profit,	4	0	0 $\frac{3}{4}$
	<hr/>		
Profit by the drilled,	4	0	0 $\frac{3}{4}$
Diff. by the broadcast,	1	3	2 $\frac{1}{4}$
	<hr/>		
Superiority of the former,	2	16	10 $\frac{1}{2}$
	<hr/>		

OBSERVATIONS.

Every circumstance in this comparison, except those occasioned merely by the variation of mode, were perfectly similar; consequently the result is, as far as the experiment extends, decisive. The drill culture is near four times over more beneficial than the broadcast. This will surprize the most zealous stickler for the old method; but the fact is absolutely so: I must own it surprizes me. Had any one asked a previous opinion on this comparison, I should from reason have decided in favour of drilling; but I should not have supposed the superiority so great. This is a point which demands the average of several years to determine; if the case turns out nearly like the present experiment, the difference between the two methods is immense, and deserves attention from every one who would wish to improve the agriculture of his country.

EXPERIMENT N° 2.

Culture, expences, and produce of half an acre, in two divisions, field T, 1765.

CULTURE.

This piece yielded wheat in 1764; the stubble was ploughed up in October, half of it on to common three feet ridges, and half on to five feet ones, and then well water-furrowed. The end of March stirred them again, arching up the five feet ridges, and reversing the three feet ones. Sowed the latter, while half ploughed, with two pecks of horse-beans, which were turned in by finishing the earth; and drilled the other half with treble rows, one foot asunder, using one peck and an half of seed. The reason of thus delaying the seed-time was the unfavourableness of the first fortnight of this month. The broadcast part was twice hand-hoed with eight inch hoes; the drilled horse hoed four times, and hand-hoed twice, and the tops of both cut off when beginning to blossom. The dryness of the year was unfavourable to beans; but these crops did not suffer greatly. Reaped them the beginning of September. Produce of the broadcast, five bushels; of the drilled, seven bushels two pecks.

Account

Account of the BROADCAST.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	8
Sowing,	-	-	-	-	-	-	0	0	3
Seed,	-	-	-	-	-	-	0	8	0
Twice hand-hoeing,	-	-	-	-	-	-	0	9	0
Cutting the tops,	-	-	-	-	-	-	0	2	3
Reaping,	-	-	-	-	-	-	0	5	0
Harvesting,	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	0	0	10
									<hr/>
							1	9	0
Rent, &c.	-	-	-	-	-	-	0	17	0
									<hr/>
							2	6	0
									<hr/>

PRODUCE.

20 Bushels at 32 s.	-	-	-	-	-	-	4	0	0
Expences,	-	-	-	-	-	-	2	6	0
									<hr/>
Profit,	-	-	-	-	-	-	1	14	0

							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	0
Carting,	-	-	-	-	-	-	0	0	6½
									<hr/>
							0	2	6½
									<hr/>
Clear profit,	-	-	-	-	-	-	1	11	5¼
									<hr/>

DRILLED.

DRILLED.

EXPENCES.

							£.	s.	d.
Two ploughings.	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	8
Drilling,	-	-	-	-	-	-	0	0	3 $\frac{1}{2}$
Seed,	-	-	-	-	-	-	0	6	0
Four horse-hoeings,	-	-	-	-	-	-	0	2	8
Two hand hoeings,	-	-	-	-	-	-	0	4	0
Cutting the tops,	-	-	-	-	-	-	0	1	9
Reaping,	-	-	-	-	-	-	0	3	9
Harvesting,	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	0	3	9
							<hr/>		
Rent, &c.	-	-	-	-	-	-	1	5	7 $\frac{1}{2}$
							0	17	0
							<hr/>		
							2	2	7 $\frac{1}{2}$

PRODUCE.

3 Quarters 6 bushels at 32 s.	-	-	-	-	-	-	6	0	0
Expences,	-	-	-	-	-	-	2	2	7 $\frac{1}{2}$
Profit,	-	-	-	-	-	-	3	17	4 $\frac{1}{2}$
							<hr/>		
Ploughing,	-	-	-	-	-	-	0	2	0
Drilling,	-	-	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	-	-	0	4	0
Carting,	-	-	-	-	-	-	0	0	6 $\frac{1}{2}$
							<hr/>		
							0	6	9 $\frac{1}{2}$
Clear profit,	-	-	-	-	-	-	3	10	7
							<hr/>		
Profit by the drilled,	-	-	-	-	-	-	3	10	7
Ditto by the broadcast,	-	-	-	-	-	-	1	11	5 $\frac{1}{2}$
							<hr/>		
							1	19	1 $\frac{1}{2}$

OBSER-

OBSERVATIONS.

The superiority of the drill culture is, in this experiment, very great, and truly decisive of the comparison: one acre drilled and horse-hoed is better than two broadcast; a difference that in a few years, on a large farm, would shew itself in very great sums. And it should here be remembered, that this is not the superiority of the drill mode to the most common of the broadcast crops, that is, unhoed ones; but to an improved practice, the expence of hand-hoeing this broadcast crop is considerable, and the benefit of it doubtless great. The advantages of drilling would appear in a very different light, if the common method was stated in the most common practice of it: but the superiority of the new husbandry is not in the crop alone, but in the state of the land; for although the hand-hoeing keeps the broadcast tolerably free from weeds, yet the effect of that operation bears no proportion to that of both horse and hand-hoeing in the new method, either in the eradication of weeds, or pulverization of the land. The three feet intervals allow of such a complete culture, that the land is left after them in as excellent a state as any fallow; which is an advantage of the first magnitude.

EXPERIMENT N^o 3.

Culture, expences, and produce of half an acre, in two divisions, field T, 1765.

CULTURE.

The first ploughing given in November 1764, half of it then thrown on to the common ridge, and half on to five feet ones, and both equally water-furrowed. In March ploughed and sowed the first broadcast, and drilled the second with treble rows, at one foot; consequently the intervals were three feet wide: used two pecks of horse-beans to the first, and a peck and a half for the second. The broadcast were hand-hoed for the first time as soon as six inches high; and in a few days after finishing the first hoeing, the second was begun: these operations were all the culture given to that part. The drilled were horse-hoed for the first time the beginning of June, turning a furrow from the rows, and forming a small ridge in the middle of each interval, then hand-hoed the rows: before the expiration of the month repeated the horse-hoeing, contrarywise to the first. In July gave two more horsehoeings and one hand-hoeing, and cut off the tops of the beans of both the divisions. The extreme drought:

drought which continued most of the summer, rendered more culture unnecessary, as not a weed arose. Reaped both at the same time in September. Produce of the broadcast, four bushels; of the drilled, five bushels and three pecks.

Account of the BROADCAST.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Water-furrowing,	0	0	6
Seed,	0	8	0
Sowing,	0	0	3
Two hand-hoeings,	0	9	0
Cutting the tops,	0	2	3
Reaping,	0	5	3
Harvesting,	0	1	3
Threshing,	0	0	6
	<hr/>		
Rent,	1	9	0
	0	17	0
	<hr/>		
	2	6	0
	<hr/>		

PRODUCE.

2 Quarters at 32 s.	3	4	0
Expences,	2	6	0
	<hr/>		
Profit,	0	18	0
	<hr/>		
	£.	s.	d.
Ploughing,	0	2	0
Carting,	0	0	6½
	<hr/>		
	0	2	6½
	<hr/>		
Clear profit,	0	15	5½
	<hr/>		

Account

Account of the DRILLED.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	6	0
Drilling,	-	-	-	-	-	-	0	0	3 $\frac{1}{2}$
Four horse-hoeings,	-	-	-	-	-	-	0	2	8
Two hand-hoeings,	-	-	-	-	-	-	0	3	9
Cutting the tops,	-	-	-	-	-	-	0	2	0
Reaping,	-	-	-	-	-	-	0	4	0
Harvesting,	-	-	-	-	-	-	0	0	9
Threshing,	-	-	-	-	-	-	0	2	10 $\frac{1}{2}$
<hr/>									
Rent, &c.	-	-	-	-	-	-	1	4	10
							0	17	0
<hr/>									
							2	1	10
<hr/>									

PRODUCE.

2 Quarters 7 bushels at 32 s.	-	-	-	-	-	4	12	0
Expences,	-	-	-	-	-	2	1	10
<hr/>								
Profit,	-	-	-	-	-	2	10	2
<hr/>								
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	2	0
Drilling,	-	-	-	-	-	0	0	3
Horse-hoeing,	-	-	-	-	-	0	4	0
Carting,	-	-	-	-	-	0	0	6 $\frac{1}{2}$
<hr/>								
						0	6	9 $\frac{1}{2}$
<hr/>								
Clear profit,	-	-	-	-	-	2	3	4 $\frac{1}{2}$
Ditto by the broadcast,	-	-	-	-	-	0	15	5 $\frac{1}{2}$
<hr/>								
Superiority of the former,	-	-	-	-	-	1	7	11
<hr/>								

OBSERVATIONS.

The great dryness of the season would not admit any very great crops of beans; but the comparison of the two methods being in this respect similar, the result is equally fair in a bad as in a good year. Drilling evidently is much superior to the other method: the difference of 15 s. and 43 s. is very great in a bad year.

EXPERIMENT N° 4.

Culture, expences, and produce of a rood, in two divisions, field L*, 1765.

CULTURE.

This rood yielded wheat in 1764, horse-hoed; the preparation very complete, both in respect of tillage and manure: the ridges (five feet ones) were ploughed in November, reversed, and the land water-furrowed. The middle of March stirred it again, arched up one half, and drilled it with tick-beans in treble rows, one foot asunder, using three-fourths of a peck of seed: turned in a peck broadcast in ploughing the other half, which was also arched; and equally water-furrowed both. I pursued the common rule of hand-hoeing the broadcast, as soon as the plants were six inches high. The operation was very well performed, the surface every where cut, and the beans, where too thick, thinned. At the same time gave the first horse-hoeing to the rows, turning a furrow *from* them, and consequently throwing a ridge up in the middle of the interval. I remarked in this rood, both in this horse-hoeing and the preparatory tillage, that this soil, from being excellently well manured and otherwise treated, was drier than other parts of the same field that had not received the same management. In the winter ploughings it turned up much more mellow, and with less adhesion than other parts: so that by ample manurings it should seem we change the nature of these soils, even in respect of the degrees of moisture and dryness; which is an object of prodigious consequence in wet countries. After this horse-hoeing I hand-hoed the rows, cutting the earth thoroughly leaving no weeds, and thinning the plants in the rows where they stood thick. The second week in June gave another horse-hoeing contrary to the former, throwing the earth of the intervals *to* the plants, and repeated the hand-hoeing; at the same time hand-hoed the broadcast again: two more horse-hoeings were given the drilled beans, the last of which left the ridges in their first form. When beginning to blossom, I
cut

cut off the tops of those in rows ; but this operation, as I have elsewhere remarked, cannot without damage be executed on broadcast crops. The drought which held, though most of the season was severe, and very unfavourable to beans : but these crops carried a fine appearance, and bid extremely fair for a good produce. The drills, however, in this respect, seemed to have the advantage. Reaped them both the beginning of September. Produce of the broadcast, three bushels ; of the drilled, four bushels. Proportions *per* acre are as follow :

Account of the BROADCAST.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	8	0
Sowing,	-	-	-	-	-	-	0	0	3
Two hand-hoeings,	-	-	-	-	-	-	0	9	0
Reaping,	-	-	-	-	-	-	0	6	0
Harvesting,	-	-	-	-	-	-	0	1	2
Threshing,	-	-	-	-	-	-	0	3	0
									<hr/>
							1	9	11
Rent, &c.	-	-	-	-	-	-	0	17	0
									<hr/>
							2	6	11

PRODUCE.

3 Quarters at 34 s.	-	-	-	-	-	-	5	2	0
Expences,	-	-	-	-	-	-	2	6	11
									<hr/>
Profit,	-	-	-	-	-	-	2	15	1
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	0
Carting,	-	-	-	-	-	-	0	0	6½
									<hr/>
							0	2	6½
									<hr/>
Clear profit,	-	-	-	-	-	-	2	12	6½

Account of the DRILLED.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Water-furrowing,	0	0	6
Seed,	0	6	0
Drilling,	0	0	3 $\frac{1}{2}$
Four horse-hoeings,	0	2	8
Two hand-hoeings,	0	4	6
Cutting the tops,	0	2	6
Reaping,	0	4	6
Harvesting,	0	1	0
Threshing,	0	4	0
	<hr/>		
Rent, &c.	1	7	11 $\frac{1}{2}$
	0	17	0
	<hr/>		
	2	4	11 $\frac{1}{2}$
	<hr/>		

PRODUCE.

4 Quarters at 34 s.	6	16	0
Expences,	2	4	11 $\frac{1}{2}$
	<hr/>		
Profit,	4	11	0 $\frac{1}{2}$
	<hr/>		
	£.	s.	d.
Ploughing,	0	2	0
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Carting,	0	0	6 $\frac{1}{2}$
	<hr/>		
	0	6	9 $\frac{1}{2}$
	<hr/>		
Clear profit,	4	4	3
	<hr/>		
Profit by the drilled,	4	4	3
Ditto by the broadcast,	2	12	6 $\frac{1}{2}$
	<hr/>		
Superiority of the former,	1	11	8 $\frac{1}{2}$
	<hr/>		

OBSER-

OBSERVATIONS.

These are both very profitable crops ; uncommonly so, considering the season. But the soil was in such noble heart after a horse-hoed crop of wheat in complete management, that it could scarcely fail of yielding an extreme beneficial produce ; the superiority of the drill culture in this account is very great, and shews I think indisputably, that it consults the nature of the vegetable much more than the common modes. The operations of horse-hoeing must necessarily be far more efficacious in pulverizing the soil around the roots for them to strike into, than common hand-hoeing, which with so strong a vegetable must be a matter of great importance : it is true the same reasoning is applicable to other plants not cultivated in this method with equal success to beans, particularly barley and oats, which in the few trials I have made on them, make a very poor figure in drills, but then the plants are quite different ; the roots of beans must be much more powerful in seeking nourishment at some distance, than those of corn : add to this, that the erect posture they always maintain is extremely favourable to the horse-hoeing culture : barley, oats, and pease, are trampled under the horses feet, and the stalks are so weak that a few moulds drove against them in the horse-hoeing are sufficient to beat them down. But with beans this is directly contrary. The difference between horse and hand-hoeing, relative in particular to the dryness of the season, should likewise be remembered, for if well and deeply pulverized earth retains the moisture of dews in the superior manner mentioned by many writers, the beans in this mode of culture must enjoy a much greater advantage than the hand-hoe can possibly confer ; which stirs only the surface.

EXPERIMENT N° 5.

Culture, expences, and produce of an acre, in two divisions, field C*, 1766.

CULTURE.

The wheat stubble of the whole field was ploughed up in October, and being then designed for experiments on beans, it was thrown into different divisions by the various methods of ploughing : half this acre was laid on to the common three foot ridge, and the other half thrown into four feet ones. The beginning of March gave both the seed earth, ploughing in a bushel of tick beans broadcast in the common ridges :
and

and after arching up the four foot ones, drilled them with three pecks of the same seed, in double rows, one foot asunder. The beginning of June horse-hoed the rows, by going about with the common plough, throwing up a small ridge in the middle of each interval: after which the rows were hand-hoed, and at the same time the broadcast beans were also hand-hoed. The drills were after this thrice more horse-hoed; and twice hand-hoed; which extraordinary tillage and cleaning were necessary on account of the prodigious number of weeds, every day brought up by the successive showers that fell throughout the summer: the broadcast part was hand-hoed once more: and the tops of both cut off when beginning to blossom: this operation is very easy in the drills; and may be performed on the broadcast when drilled, but when on the flat is very difficult. Reaped the middle of September. Produce of the broadcast one quarter and half a peck. Of the drilled one quarter, three bushels.

Account of the BROADCAST.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	4 $\frac{1}{2}$
Seed,	-	-	-	-	-	-	0	4	3
Sowing,	-	-	-	-	-	-	0	0	3
Twice hand-hoeing,	-	-	-	-	-	-	0	4	6
Cutting the tops,	-	-	-	-	-	-	0	1	6
Reaping,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	1	0
Threshing,	-	-	-	-	-	-	0	1	3
							0	16	7 $\frac{1}{2}$
Rent, &c.	-	-	-	-	-	-	0	8	6
							1	5	1 $\frac{1}{2}$

PRODUCE.

1 Quarter, and half a peck at 34 s.	-	-	-	-	-	-	1	14	6 $\frac{1}{2}$
Expences,	-	-	-	-	-	-	1	5	1 $\frac{1}{2}$
Profit,	-	-	-	-	-	-	0	9	5

Ploughing,

	£.	s.	d.
Ploughing, - - - - -	0	2	4 $\frac{3}{4}$
Carting, - - - - -	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	2	8
Clear profit, 13 s. 6 d. <i>per acre</i> , - - -	0	6	9
	<hr/>		

Account of the DRILLED.

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	1	0
Water-furrowing, - - - - -	0	0	4 $\frac{1}{2}$
Seed, - - - - -	0	3	2 $\frac{1}{4}$
Drilling, - - - - -	0	0	2 $\frac{1}{4}$
Four horse-hoeings, - - - - -	0	1	6
Three hand-hoeings, - - - - -	0	4	8
Cutting the tops, - - - - -	0	1	6
Reaping, - - - - -	0	2	0
Harvesting, - - - - -	0	0	10
Threshing, - - - - -	0	1	8
	<hr/>		
	0	16	11
Rent, &c. - - - - -	0	8	6
	<hr/>		
	1	5	5
	<hr/>		

PRODUCE.

1 Quarter, 3 bushels, at 34 s. - - -	2	6	9
Expences, - - - - -	1	5	5
	<hr/>		
Profit, - - - - -	1	1	4

	£.	s.	d.
Ploughing, - - - - -	0	2	4 $\frac{3}{4}$
Drilling, - - - - -	0	0	1 $\frac{3}{4}$
Horse-hoeing, - - - - -	0	2	5
Carting, - - - - -	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	5	2 $\frac{3}{4}$
Clear profit, 1 l. 12 s. 2 $\frac{1}{2}$ d. <i>per acre</i> , - - -	0	16	1 $\frac{1}{4}$
	<hr/>		

Profit

					£.	s.	d.
Profit by the drilled,	-	-	-	-	1	12	2½
Ditto by the broadcast,	-	-	-	-	0	13	6
Superiority of the former,	-	-	-	-	0	18	8½

OBSERVATIONS.

I had some other experiments on beans in this field, which succeeded upon the whole, much better than these; tho' I know not to what to attribute it: but the comparison between the two methods, is here very decisive: the drilled beans are far superior to the others; and it is to be observed, that the common husbandry has the advantage of management in respect to cleaning something better than usual among the generality of farmers. But the operations of horse-hoeing are to so strong a vegetable infinitely more efficacious than hand-hoeing: and another circumstance is, the superiority of hand-work for plants that stand in rows, to the same work for those that grow promiscuously. The beans in this drilled crop branched more, and were better strung with pods than the broadcast ones; which is a remark I have scarcely ever failed of making on my crops of beans in these methods.

EXPERIMENT N° 6.

Culture, expences, and produce of a rood, in two divisions, field L*, 1766.

CULTURE.

Cropped with wheat in complete management in 1765. The stubble ploughed up in October; and the seed-earth given in March: one half sown broadcast and ploughed in upon the ridge; and the other half drilled with treble rows at one foot, on five feet ridges, arched: used for the first a peck of tick beans; and for the latter three quarters of a peck: the rich state of the land threw out abundance of weeds, which kept me under a constant attention to destroy them: for that purpose, and for pulverizing the intervals, I gave four horse-hoeings, three hand-hoeings and one hand-weeding to the drills; and two hand-hoeings to the broadcast; and likewise cut the tops off both: I scarcely remember a season that equalled this in wetness, most of the fields in this neighbourhood were painted white and yellow with the quantities of charlock and mayweed.

mayweed. The crops were reaped in September: Products as follow:
The broadcast three bushels: The drilled five bushels and one peck.
Proportions,

Account of the BROADCAST.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	8	6
Sowing,	-	-	-	-	-	-	0	0	3
Twice hand-hoeing,	-	-	-	-	-	-	0	10	0
Cutting the tops,	-	-	-	-	-	-	0	3	0
Reaping,	-	-	-	-	-	-	0	5	0
Harvesting,	-	-	-	-	-	-	0	2	3
Threshing,	-	-	-	-	-	-	0	3	0
							<hr/>		
							1	14	6
Rent, &c.	-	-	-	-	-	-	0	17	0
							<hr/>		
							2	11	6½
							<hr/>		

PRODUCE.

3 Quarters, at 34 s.	-	-	-	-	-	-	5	2	0
Expences,	-	-	-	-	-	-	2	11	6½
							<hr/>		
Profit,	-	-	-	-	-	-	2	10	6
							<hr/>		
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	4	9½
Carting,	-	-	-	-	-	-	0	0	6½
							<hr/>		
							0	5	4
							<hr/>		
Clear profit,	-	-	-	-	-	-	2	5	2
							<hr/>		

Account of the DRILLED.

EXPENCES.

	£.	s.	d.
Two ploughings, - - - - -	0	2	0
Water-furrowing, - - - - -	0	0	6
Seed, - - - - -	0	6	4 $\frac{1}{2}$
Drilling, - - - - -	0	0	3
Four horse-hoeings, - - - - -	0	2	8
Three hand-hoeings, - - - - -	0	7	0
One hand weeding, - - - - -	0	2	0
Cutting the tops, - - - - -	0	2	0
Reaping, - - - - -	0	4	6
Harvesting, - - - - -	0	2	0
Threshing, - - - - -	0	5	3
	<u>1</u>	<u>14</u>	<u>6$\frac{1}{2}$</u>
Rent, &c. - - - - -	0	17	0
	<u>2</u>	<u>11</u>	<u>6$\frac{1}{2}$</u>

PRODUCE.

5 Quarters 2 bushels at 34s. - - - - -	8	18	9
Expences, - - - - -	2	11	6 $\frac{1}{2}$
Profit, - - - - -	6	7	2 $\frac{1}{2}$
	£.	s.	d.
Ploughing, - - - - -	0	4	9
Drilling, - - - - -	0	0	3
Horse-hoeing, - - - - -	0	4	0
Carting, - - - - -	0	0	6 $\frac{1}{2}$
	<u>0</u>	<u>9</u>	<u>6$\frac{1}{2}$</u>
Clear profit, - - - - -	5	17	8
Ditto by the broadcast, - - - - -	2	5	2
Superiority of the former, - - - - -	3	12	6

OBSER-

OBSERVATIONS.

This experiment proves very clearly the vast consequence of sowing beans as well as other grain and pulse on richly prepared land: our farmers depend too much on what they call strong land for beans; that is stiff clay; but as to manuring for them, sowing them within a crop of a rich manuring, or ploughing for them more than once, these are cases scarcely to be found in the farmers institutes. But how beans can with any profit be cultivated upon the plan of some countries, of which I have heard, where they sow them the last crop in the course, I have no conception: the loss attending such a conduct must be great: in our loams of indifferent quality, it is evident that beans may be made a standing crop, and an extreme profitable one, provided the farmer bestows some dung on them: I do not apprehend any crop will pay better for it; and perhaps it will be found more advantageous to manure well for beans, and to sow wheat after them; the wheat crops would be certainly cleaner than such as received the manure at first hand, provided the beans were drilled and kept perfectly clean.

The comparison of the two methods is, I apprehend, very satisfactory. The superiority of 3 l. 12 s. 6 d. *per* acre, is even more than I should have conceived from viewing the crops: but the drill culture fills every stalk with pods, in a manner much superior to the common one: indeed my trials on this point are so decisive, that I should never think of sowing beans in any other mode, with a view to profit: and I am fully determined never more to follow the old husbandry in this crop, except experimentally, to prove its vast inferiority.

EXPERIMENT N^o 7.

Culture, expences, and produce of an acre, in two divisions, field S, 1767.

CULTURE.

Yielded tares in 1766; the stubble of which was ploughed up in November, half on to five feet, and half on to three feet ridges; and the land well water-furrowed. In March stirred it again; arching up the five feet ridges, and drilling each with three rows of tick beans, one foot asunder, using three pecks of seed. Reversed the common ridges, turning in one bushel of seed; and then again water-furrowed both equally.

The year 1767, like the preceding, was so extremely wet that few of our fields were free from a great quantity of weeds. In common broad-

cast crops of corn they could not be extirpated; in hoed ones uncommon diligence and expence were necessary to keep them decently clean: those of beans, of which I am now giving the register, were under perpetual operations for that purpose. The drilled were four times horse-hoed, thrice hand-hoed, and once hand-weeded; and the broadcast twice hand-hoed: the tops of both were also cut off as before. Reaped them the latter end of September. Produce as follows: Of the broadcast, six bushels; of the drilled, thirteen bushels.

Account of the BROADCAST.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	1	0
Water-furrowing,	0	0	4
Seed,	0	4	3
Sowing,	0	0	1½
Twice hand-hoeing,	0	4	6
Cutting the tops,	0	1	6
Reaping,	0	2	6
Harvesting,	0	1	2
Threshing,	0	1	0
	0	16	4½
Rent, &c.	0	8	6
	1	4	10½

PRODUCE.

6 Bushels at 34 s.	1	5	6
Expences,	1	4	10½
Profit,	0	0	7½

	£.	s.	d.
Ploughing,	0	2	5½
Carting,	0	0	3½
	0	2	8½
The above profit,	0	0	7½
Loss, 4 s. 2 d. per acre.	0	2	1½

Account

Account of the DRILLED.

EXPENCES.

	£	s.	d.
Two ploughings, - - - - -	0	1	0
Water-furrowing, - - - - -	0	0	4
Drilling, - - - - -	0	0	1
Seed, - - - - -	0	6	4
Four horse-hoeings, - - - - -	0	1	4
Three hand-hoeings, - - - - -	0	4	0
One hand-weeding, - - - - -	0	1	0
Cutting the tops, - - - - -	0	1	6
Reaping, - - - - -	0	2	3
Harvesting, - - - - -	0	1	0
Threshing, - - - - -	0	2	0
	<hr/>		
	1	0	11 $\frac{1}{4}$
Rent, &c. - - - - -	0	8	6
	<hr/>		
	1	9	5 $\frac{1}{4}$

PRODUCE.

13 Bushels at 34s. - - - - -	2	15	3
Expences, - - - - -	1	9	5 $\frac{1}{4}$
	<hr/>		
Profit, - - - - -	1	5	9 $\frac{3}{4}$

	£	s.	d.
Ploughing, - - - - -	0	2	5 $\frac{1}{2}$
Drilling, - - - - -	0	0	1 $\frac{1}{2}$
Horse-hoeing, - - - - -	0	2	0
Carting, - - - - -	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	4	10

Clear profit, 2l. 1s. 11 $\frac{1}{2}$ d. per acre. - - - - -	1	0	11 $\frac{3}{4}$
	<hr/>		
Profit by the drilled, - - - - -	2	1	11 $\frac{1}{2}$
Loss by the broadcast, - - - - -	0	4	2
	<hr/>		
Superiority of the former, - - - - -	2	6	1 $\frac{1}{4}$

OBSER-

OBSERVATIONS.

The superiority of the new husbandry, in the culture of beans, is here sufficiently evident. The conduct of the old method is, in this trial, by no means bad; but drilling is, notwithstanding, far superior. Indeed the superiority is much greater than any person could suppose from the mere viewing the crops. The effect of the horse hoeing must be great upon a vegetable that has such a power of drawing nourishment from all around: but in respect to the state of the land after the crop is off, the difference between the two methods is also very great; for the soil is much better pulverized, and far cleaner from weeds, than the utmost efforts of hand-hoeing can effect. I have often determined to give more hand-hoeings than two to my broadcast beans; but I have generally found it difficult, from their promiscuous way of growing; the men have not the command of them which they have of those in rows with intervals three feet wide.

EXPERIMENT N° 8.

Culture, expences, and produce of an acre and half, in three divisions, field S, 1767.

CULTURE.

This piece, like the preceding, yielded tares for hay in 1766: the stubble ploughed up in November, and water-furrowed. In March ploughed and sowed two-thirds of the piece upon the common ridge broadcast, using a bushel of tick-beans to each. Drilled the other third in treble rows at one foot on the five feet ridges, using three pecks of the same seed. The division of the broadcast crop was made with design to try the real utility of hand-hoeing. A gentleman having called on me the last year to view my experiments, mentioned the practice of several counties with which he was acquainted of never hand-hoeing their beans; and argued against the expediency of the practice relative to profit. Reasoning and arguing such points, I must own, was never satisfactory to me; and as he said that the saving the expence might bring the broadcast crops nearer to the drilled, I immediately promised him to form an experiment in three parts; one broadcast hoed; another broadcast, but not hoed; and a third drilled; that all three might be compared together, and their comparative merit clearly decided. In consequence of it, I made this trial.

The drilled part received four horse-hoeings and three hand-hoeings : the extreme wetness of the year rendered all this tillage and expence absolutely necessary to keep the land in that order which is the soul of the new husbandry. One part of the broadcast was twice hand-hoed, and the other not touched. They were reaped in September. The produce as follows : Of the broadcast unhoed, four bushels one peck ; of the broadcast hoed, eight bushels two pecks ; of the drilled, thirteen bushels two pecks.

Account of the BROADCAST unhoed.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	4	3
Sowing,	-	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Reaping,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	1	2
Threshing,	-	-	-	-	-	-	0	0	9
							0	10	3 $\frac{1}{2}$
Rent, &c.	-	-	-	-	-	-	0	8	6
							0	18	9 $\frac{1}{2}$

PRODUCE.

4 Bushels one peck, at 34 s.	-	-	-	-	-	0	18	0 $\frac{3}{4}$
Loss,	-	-	-	-	-	0	0	8 $\frac{3}{4}$
						£.	s.	d.
Ploughing,	-	-	-	-	-	0	2	5 $\frac{1}{4}$
Carting,	-	-	-	-	-	0	0	3 $\frac{1}{4}$
						0	2	8 $\frac{1}{2}$
Total loss, 6 s. 10 $\frac{1}{2}$ d. per acre.	-	-	-	-	-	0	3	5 $\frac{1}{4}$

Account

Account of the BROADCAST hoed.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	4	3
Sowing,	-	-	-	-	-	-	0	0	1 $\frac{1}{2}$
Twice hand-hoeing,	-	-	-	-	-	-	0	4	6
Reaping,	-	-	-	-	-	-	0	2	6
Harvesting,	-	-	-	-	-	-	0	1	4
Threshing,	-	-	-	-	-	-	0	1	4
							<hr/>		
Rent, &c.	-	-	-	-	-	-	0	15	6 $\frac{1}{2}$
							0	8	6
							<hr/>		
							1	4	0 $\frac{1}{2}$
							<hr/>		

PRODUCE.

8 Bushels 2 pecks, at 34 s.	-	-	-	-	-	-	1	16	1 $\frac{1}{2}$
Expences,	-	-	-	-	-	-	1	4	0 $\frac{1}{2}$
							<hr/>		
Profit,	-	-	-	-	-	-	0	12	1 $\frac{1}{2}$
							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	2	5 $\frac{1}{4}$
Carting,	-	-	-	-	-	-	0	0	3 $\frac{1}{4}$
							<hr/>		
							0	2	8 $\frac{1}{2}$
							<hr/>		
Clear profit, 18 s. 10d. <i>per acre</i> ,	-	-	-	-	-	-	0	9	5
							<hr/>		

Account of the DRILLED.

EXPENCES.

							£.	s.	d.
Ploughing,	-	-	-	-	-	-	0	1	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Seed,	-	-	-	-	-	-	0	3	2 $\frac{1}{4}$
Drilling,	-	-	-	-	-	-	0	0	1 $\frac{3}{4}$
Four horse-hoeings,	-	-	-	-	-	-	0	1	4
Three hand-hoeings,	-	-	-	-	-	-	0	4	0
							<hr/>		
							Reaping,		

	£.	s.	d.
Reaping, - - - - -	0	2	0
Harvesting, - - - - -	0	0	10
Threshing, - - - - -	0	1	8
	<hr/>		
	0	14	8
Rent, &c. - - - - -	0	8	6
	<hr/>		
	1	3	2

PRODUCE.

13 Bushels 2 pecks at 34 s. - - - - -	2	17	4 $\frac{1}{2}$
Expences, - - - - -	1	3	2
	<hr/>		
Profit, - - - - -	1	14	2 $\frac{1}{2}$

	£.	s.	d.
Ploughing, - - - - -	0	2	5 $\frac{1}{4}$
Drilling, - - - - -	0	0	1 $\frac{1}{2}$
Horse-hoeing, - - - - -	0	2	0
Carting, - - - - -	0	0	3 $\frac{1}{4}$
	<hr/>		
	0	4	10

Clear profit, 2 l. 18 s. 9 d. <i>per acre.</i> - - - - -	1	9	4 $\frac{1}{2}$
	<hr/>		

Profit by the drilled, - - - - -	2	18	9
Ditto by the broadcast, - - - - -	0	18	10
	<hr/>		

Superiority of the former, - - - - -	1	19	11
	<hr/>		

Profit by the drilled, - - - - -	2	18	9
Loss by the broadcast unhoed, - - - - -	0	6	10 $\frac{1}{2}$
	<hr/>		

Superiority of the former, - - - - -	3	5	7 $\frac{1}{2}$
	<hr/>		

Profit by the broadcast hoed, - - - - -	0	18	10
Loss by the broadcast unhoed, - - - - -	0	6	10 $\frac{1}{2}$
	<hr/>		

Superiority of the former, - - - - -	1	5	8 $\frac{1}{2}$
	<hr/>		

OBSERVATIONS.

The result of this experiment is not precisely as I expected ; but it is extremely decisive. I did not imagine the unhoed crop would have produced so much ; for having attended pretty minutely to the effect of hoeing, I expected the crop on this land would, without its assistance, be quite choaked with weeds : indeed their appearance in it was truly odious ; but the produce turned out something towards expences, though a losing crop. What motive or principles, but those of mere saving, can influence the farmers in the counties mentioned by my friend to omit so necessary an operation as hand-hoeing their beans, I cannot conceive. It is evident, on this soil, that the crop will be a losing one without it ; and so I think must be the case on all soils, unless they were sown on a clean fallow, which is never done.

But the grand object here is the comparison. These divisions were perfectly equal in every respect ; soil, preparation, culture, seed, time, every point the same, except the hand-hoeing : so that whatever difference is found in the crop must be owing to that article alone. Such a comparison is indisputably decisive. We clearly find that this operation occasions a superiority of 1 l. 5 s. 8½ d. *per* acre, and a superiority of the most particular kind ; for it is not a superiority on the ballance of two articles of profit, but on one of profit and the other of loss : it is the difference of growing rich in one case, and going to gaol in the other. But if the mere sum is taken, 1 l. 5 s. 8½ d. pays the expence of the hand-hoeings, and then leaves a profit of 16 s. 8 d. *per* acre. Can any thing be of clearer importance ? Is it not extremely evident, that those saving farmers who will not bestow 9 s. an acre on hand-hoeing their beans, lose considerably by their false prudence ?

But another point remains to be mentioned of yet greater importance, which is, the state the land is left in by the crops thus differently managed. This opens a new comparison, in which the great consequence of hoeing must be extremely obvious. After a hoed crop the farmers in this country very judiciously sow wheat, considering the beans so treated as a fallow : and let me observe, that they get not only good but *clean* crops in this management ; an effect that is merely and solely owing to the hand-hoeing : for if they were to omit that operation, their wheat crop must inevitably be worthless, and sown under a certainty of loss. The bean stubble in question unhoed was, after harvest, as full as possible of weeds : so that I think no farmer in his senses could for a moment think of venturing wheat on it ; whereas the hoed division was actually
fit

fit for wheat, which I should have sown upon it, had I staid in the farm; but my successor sowed the whole field with oats.

Now the difference that in a few years arises from so small a variation as the expenditure of only 9s. is prodigious. At the end of the first year, there is a ballance of 1l. 5s.—at the end of the second, there is the expence, on one side, of a year's fallow, and, on the other, the profit of a wheat crop; which is an immense difference. After the fallow wheat may be supposed to succeed, and after the other wheat beans again, which, though they may not equal the opposite crop of wheat, yet will be a profitable crop: after them barley, and with that barley-clover, and upon that clover wheat; which is a most profitable course: whereas in the other management the wheat must be succeeded by barley or oats, and without clover. So that this single variation, slight at first, soon becomes a matter of great consequence.

The other method here tried, *viz.* the drill culture, is far superior to both in all these circumstances. The profit of the beans is 1l. 19s. 11d. superior to that even of the hoed crop, which is very great, and proves, if any thing can, the importance of cultivating them in this manner. The horse-hoeings, and the effectual manner in which the hand-tillage is performed from the crop being sown in rows, make the beans shoot out with uncommon vigour, and yield more numerous and better filled pods: and in respect to the preparation made by the crop for others which are to follow, there is no comparison in the state of the land: the drilled part has, literally speaking, not a weed to be found, and is in a very fine state of pulverization, equal to most fallows, and superior to many. Indeed it stands to reason that the tillage bestowed on the rows and intervals, must exceed the best hand-hoeing that can be given to a broadcast crop.

EXPERIMENT N° 9.

Culture, expences, and produce of half an acre, in two divisions, field S, 1767.

CULTURE.

The tare stubble was ploughed up in November, and the land water-furrowed. In March manured this piece equally with twelve loads of compost, consisting of equal parts of farm-yard dung and virgin-mold: then ploughed and sowed one half on common three feet ridges, turning in two pecks of tick-beans with the manure; and the other five feet ridges, arched and drilled with a peck and an half of the same beans in treble rows on each ridge one foot asunder. Hand-hoed the broadcast

H h h 2

rood

rood as soon as five inches high, and horse-hoed the other: that operation was repeated thrice more; the rows also were hand-hoed three times, and hand-weeded once. The broadcast had another hand-hoeing, and the tops of both were cut off as soon as the beans began to blossom. Reaped them the middle of September. Produce of the broadcast, seven bushels; of the drilled, ten bushels two pecks. Proportions *per acre*.

Account of the BROADCAST.

EXPENCES.

							£.	s.	d.
Two ploughings,	-	-	-	-	-	-	0	2	0
Water-furrowing,	-	-	-	-	-	-	0	0	6
Manuring,	-	-	-	-	-	-	0	9	9
Seed,	-	-	-	-	-	-	0	8	6
Sowing,	-	-	-	-	-	-	0	0	3
Hand hoeing twice,	-	-	-	-	-	-	0	9	0
Cutting the tops,	-	-	-	-	-	-	0	3	0
Reaping,	-	-	-	-	-	-	0	5	0
Harvesting,	-	-	-	-	-	-	0	2	3
Threshing,	-	-	-	-	-	-	0	3	6
							<hr/>		
Rent, &c.	-	-	-	-	-	-	2	3	9
							0	17	0
							<hr/>		
							3	0	9
							<hr/>		

PRODUCE.

3 Quarters and an half at 34 s.	-	-	-	-	-	-	5	19	0
Expences,	-	-	-	-	-	-	3	0	9
							<hr/>		
Profit,	-	-	-	-	-	-	2	18	3
Ploughing,	-	-	-	-	-	-	0	4	10 $\frac{1}{2}$
Manuring,	-	-	-	-	-	-	0	15	0
Carting in harvest,	-	-	-	-	-	-	0	0	6 $\frac{1}{2}$
							<hr/>		
							1	0	5
							<hr/>		
Clear profit,	-	-	-	-	-	-	1	17	10
							<hr/>		

Account

Account of the DRILLED.

EXPENCES.

	£.	s.	d.
Two ploughings,	0	2	0
Water-furrowing,	0	0	6
Manuring,	0	9	9
Seed,	0	6	4 $\frac{1}{2}$
Drilling,	0	0	3 $\frac{1}{2}$
Four horse-hoeings,	0	2	8
Three hand-hoeings,	0	8	0
Cutting the tops,	0	2	6
One weeding,	0	1	6
Reaping,	0	4	0
Harvesting,	0	2	0
Threshing,	0	5	1 $\frac{1}{2}$
	<hr/>		
Rent, &c.	2	4	8 $\frac{1}{2}$
	0	17	0
	<hr/>		
	3	1	8 $\frac{1}{2}$

PRODUCE.

5 Quarters 2 bushels at 34s.	8	18	6
Expences,	3	1	8 $\frac{1}{2}$
	<hr/>		
Profit,	5	16	9 $\frac{1}{2}$

	£.	s.	d.
Ploughing,	0	4	10 $\frac{1}{2}$
Drilling,	0	0	3
Horse-hoeing,	0	4	0
Manuring,	0	15	0
Carting in harvest,	0	0	6 $\frac{1}{2}$
	<hr/>		
	1	4	8
	<hr/>		
Clear profit,	4	12	1 $\frac{1}{2}$
Ditto by the broadcast,	1	17	10
	<hr/>		
Superiority of the former,	2	14	3 $\frac{1}{2}$

OBSER-

OBSERVATIONS.

This comparison shews that the superiority of the new husbandry is equally great under every variation of fertility; the broadcast does not profit more from dung than the drilled; on the contrary, the latter exceeds the former as much when the land is well manured as when no manure at all is laid; which I am inclined to think remarkable; for the broadcast crop stands more equally over the whole surface and consequently better adapted, (as might be imagined) to draw the nourishment from the manure. But the contrary being indisputably the fact, proves that the operations of horse-hoeing enable the roots of the beans to extend with ease into the loose mould in the intervals, and draw all the nourishment from thence as well as if the plants were there scattered: for the plough in horse-hoeing four times, throws all the loose earth of the intervals twice against the rows, and as it each time falls into a furrow that has been sometime open, it of course lies in a loose and mellow state for the roots to penetrate.

GENERAL OBSERVATIONS ON these EXPERIMENTS.

The preceding trials are upon the whole so extremely decisive, that I shall not fail, in my future practice, to make them the guide of my conduct: but that the degree of merit belonging to each method may be accurately known, I shall proceed to extract the particulars of the trials, under the heads of Expences, Product, and Profit and Loss.

B R O A D C A S T.

EXPENCES.

							£.	s.	d.
Experiment N ^o 1.	-	-	-	-	-	-	2	8	9 $\frac{1}{4}$
2.	-	-	-	-	-	-	2	8	6 $\frac{1}{2}$
3.	-	-	-	-	-	-	2	2	7 $\frac{1}{2}$
4.	-	-	-	-	-	-	2	9	5 $\frac{1}{2}$
5.	-	-	-	-	-	-	2	15	7

Chap. II.

B E A N S.

431

						£.	s.	d.
6.	-	-	-	-	-	2	16	10
7.	-	-	-	-	-	2	15	2
8.	-	-	-	-	-	2	13	6
9.	-	-	-	-	-	4	1	2
						24	11	8 $\frac{1}{4}$

Average, 2 l. 14 s. 7 $\frac{1}{2}$ d.

D R I L L E D.

N ^o							£.	s.	d.
1.	-	-	-	-	-	-	2	7	11 $\frac{1}{4}$
2.	-	-	-	-	-	-	2	9	5
3.	-	-	-	-	-	-	2	8	7 $\frac{1}{2}$
4.	-	-	-	-	-	-	2	11	9
5.	-	-	-	-	-	-	3	1	3 $\frac{1}{2}$
6.	-	-	-	-	-	-	3	1	1
7.	-	-	-	-	-	-	3	8	6 $\frac{1}{2}$
8.	-	-	-	-	-	-	2	16	0
9.	-	-	-	-	-	-	4	6	4 $\frac{1}{2}$
							26	11	0 $\frac{1}{4}$

Average, 2 l. 19 s.

Expence of the drilled,	-	-	-	-	-	2	19	0
Ditto of the broadcast,	-	-	-	-	-	2	14	7 $\frac{1}{2}$
Excess of the former,	-	-	-	-	-	0	4	4 $\frac{1}{2}$

It appears from hence that the common idea of the drill husbandry being extravagantly expensive is very false. The excess of 4 s. 4 d. per acre is but a trifle: and when the extreme good order in which the land is left, is taken into the account, and which is owing to this small excess of expence, it will appear yet less. But here I should remark, that in that case as in all the others throughout these experiments, nothing is reckoned for the repairs of the drill plough. I have more than once remarked, that my trials cost me vast sums of money, considering the extent: I had for some time no drill plough, all the drills being made by hand work; and when I had a plough the reparations of it were infinite; so that I could not with any propriety have charged them to the

account

account of the new husbandry; the expences therefore which I have minuted, are under the supposition of complete instruments being discovered: for certainly it is no discredit to the drill culture that one plough should fall in pieces as fast as used, while others more perfect may, for any thing I know to the contrary, be in use.

PRODUCT.

B R O A D C A S T.

Experiment N°	1.	2.	3.	4.	5.	6.	7.	8.	9.	Q.	B.	P.
	-	-	-	-	-	-	-	-	-	2	2	0
	-	-	-	-	-	-	-	-	-	2	4	0
	-	-	-	-	-	-	-	-	-	2	0	0
	-	-	-	-	-	-	-	-	-	3	0	0
	-	-	-	-	-	-	-	-	-	2	0	1
	-	-	-	-	-	-	-	-	-	3	0	0
	-	-	-	-	-	-	-	-	-	1	4	0
	-	-	-	-	-	-	-	-	-	2	1	0
	-	-	-	-	-	-	-	-	-	3	4	0
										21	7	1

Average, 2 quarters 3 bushels 2 pecks.

D R I L L E D.

Experiment N°	1.	2.	3.	4.	5.	6.	7.	8.	9.	Q.	B.	P.
	-	-	-	-	-	-	-	-	-	4	0	0
	-	-	-	-	-	-	-	-	-	3	6	0
	-	-	-	-	-	-	-	-	-	2	7	0
	-	-	-	-	-	-	-	-	-	4	0	0
	-	-	-	-	-	-	-	-	-	2	6	0
	-	-	-	-	-	-	-	-	-	5	2	0
	-	-	-	-	-	-	-	-	-	3	2	0
	-	-	-	-	-	-	-	-	-	3	3	0
	-	-	-	-	-	-	-	-	-	5	2	0
										34	4	0

Average, 3 quarters, 6 bushels, 2 pecks.

Drilled

	Q.	B.	P.
Drilled, - - - - -	3	6	2
Broadcast, - - - - -	2	3	2
Superiority of the former, - - - - -	1	3	0

This superiority of produce, the average of nine experiments on different soils, seasons, and with various treatment, is very decisive and proves sufficiently, that this culture is better adapted to the produce of great crops of beans than the common method: a point which I shall venture to speak of as so clearly determined, as no longer to leave room for doubt: it is true such of my readers as have been much prejudiced against the new husbandry, from the bad success in various branches of it, will not readily allow of this decision; but I apprehend that such experimenters have collected their opinion from the culture of other vegetables than beans; but it is always unjust to form general opinions from particular instances: I do not by any means venture to assert the drill culture to be universally good, because it has succeeded greatly with me in the production of beans; nor should others declare it to be generally bad because it has failed in some other particular article. Such general praise or blame is the bane of husbandry: I have the strongest reasons for thinking the drill culture as excellent for beans as it is execrable for some other plants.

P R O F I T and L O S S.

B R O A D C A S T.

	£.	s.	d.
Experiment, N ^o 1. Profit, - - - - -	1	3	2 $\frac{1}{4}$
2. - - - - -	1	11	5 $\frac{1}{2}$
3. - - - - -	0	15	5 $\frac{1}{2}$
4. - - - - -	2	12	6 $\frac{1}{2}$
5. - - - - -	0	13	6
6. - - - - -	2	5	2
8. - - - - -	0	18	10
9. - - - - -	1	17	10
	11	17	11 $\frac{3}{4}$
7. Loss, - - - - -	0	4	2
Clear profit, - - - - -	11	13	9 $\frac{3}{4}$
Average, 11. 5s. 11 $\frac{3}{4}$ d.			

VOL. I.

I i i

D R I L L E D.

D R I L L E D.

N ^o	1.	Profit,	-	-	-	-	£.	s.	d.
2.	-	-	-	-	-	-	4	0	0 $\frac{3}{4}$
3.	-	-	-	-	-	-	3	10	7
4.	-	-	-	-	-	-	2	3	4 $\frac{1}{2}$
5.	-	-	-	-	-	-	4	4	3
6.	-	-	-	-	-	-	1	12	2 $\frac{1}{2}$
7.	-	-	-	-	-	-	5	17	8
8.	-	-	-	-	-	-	2	1	11 $\frac{1}{2}$
9.	-	-	-	-	-	-	2	18	9
							4	12	1 $\frac{1}{2}$
							31	0	11 $\frac{3}{4}$

Average, 3 l. 8 s. 11 $\frac{3}{4}$ d.

Profit by the drilled,	-	-	-	-	3	8	11 $\frac{3}{4}$
Ditto by the broadcast,	-	-	-	-	1	5	11 $\frac{3}{4}$
Superiority of the former,	-	-	-	-	2	3	0

This part of the comparison is the material object: the quantity of the product may shew the spirit and tendency of a mode of culture, but it does not explain the proportion of the expences and the product. We here find that the drill culture is superior to the broadcast by 43 s. *per* acre, in neat profit after all expences are paid; which is so important a difference that it cannot make too much impresson on the minds of those who may have an opportunity of practising either. For it is not only the superiority of one crop, but also of the whole course, as I have before remarked: for the land is left after the horse-hoeing in so much better order than after the broadcast crops, that the product of the successive ones, of whatever kind, cannot fail of proving proportionably good: keeping the land in a loose condition and perfectly free from weeds, are circumstances peculiar to this husbandry: broadcast crops will not admit them.

It must be evident to every unprejudiced person, that a superiority of 43 s. *per* acre, and an attendant great advantage in the state of the land, are objects of no trifling nature: that they ought to influence even common farmers to practise a husbandry which such repeated trials prove to be so uniformly superior to the common practice; but such husbandmen are too well known to adhere so closely to their old customs, that much cannot

cannot be expected from them : it is therefore gentlemen that should exert themselves in such a case to introduce a method which will indubitably prove so greatly advantageous as to secure them a certainty of success. And it is that success alone which will have any power over the minds of great husbandmen.

I do not think the superiority of the drill culture, as a preparation for wheat or barley, can be estimated at less than 15 s. *per* acre : here therefore is a total superiority of near three pounds an acre in favour of drilling : is it not evident that this, in a large clay or loam farm, will amount to some hundred pounds *per annum* ? Three hundred pounds a year upon one hundred acres, is an object of great importance.

Nor should it be thought that the great advantages attending this culture of beans are any novelty, or any practice now introduced by me : so far from it, drilling beans is the common husbandry in Kent ; much practiced in Essex ; and a good deal in the clay parts of Norfolk : this shews that the method has been found by very many husbandmen much superior to the common practice, or most assuredly so many common farmers would not have quitted in its favour, their old practices, delivered down to them by their prudent ancestors : So that this part of the new husbandry cannot with any propriety be called a novelty ; since it is the practice of so many common farmers in certain parts of the kingdom : how much is it to be wished that all parts of it may come into a method of such merit !

It must be confessed that common farmers in this their choice of a crop for drilling, have shewn no slight judgment : wheat has succeeded but indifferently with me : barley, oats, and pease horse-hoed, have been absolutely nought, but beans much superior to the common mode : now this plant being the only one of corn or pulse, thus cultivated by farmers, gives one much reason to think, did not experiment prove the fact, that its nature is much more adapted to this culture than any of those crops.

The mischief of horse-hoeing corn and pease, from the weakness of the stalks, is so great, that it cannot answer ; unless indeed they are called horse-hoed crops, which receive one or two operations of that sort very quickly at their first growth : but that I do not call the horse-hoeing husbandry ; for the land, in such a practice of it, is by no means kept well pulverized, and so perfectly clean from weeds as are requisite in that mode. So conducted, the superiority of it, as a preparation for other crops, can be little over the common broadcast hand-hoed ones.

I shall venture from experience to recommend the complete practice of the horse-hoeing culture for beans, as much superior to the most improved of the common methods.

S E C T. IV.

Of the TIME of SOWING.

I Had formed several experiments on the quantity of seed requisite for an acre of beans; but as I advanced in my practice, I found the utility of them would be very trifling, and therefore discontinued them; for this reason I omit inserting them. The truth of the matter is, that such experiments would be of use to none but those slovenly farmers who never hoe their beans: for when the crop is treated as it certainly ought, the quantity of seed is of little consequence; the number of beans not depending on the quantity of seed, but on the hand-hoes cutting up many or few. It is therefore the same as in turneps; if a pint or gallon of seed be sown, the crop is the same; the workmen setting them out at proper distances, without any regard to the number of plants. I think I may, therefore, venture to burn my trials on quantity of seed-beans. Of these papers as I am induced to think may be of utility to the public, are more voluminous than I expected or designed; consequently I have the less inclination to add unnecessarily to them.

The time of sowing is another matter, and certainly an important one: that it is not decisively known, clearly appears from the *various* practice of farmers on the *same* soil. Some delay sowing, through choice, till the end of March; others I have known to sow in April: some will not venture the seed in the ground after February; others make use of the first ploughing season after Christmas; and others again sow before Christmas. I am acquainted with various farmers, even in this neighbourhood, who practise among them all these variations. Now it is sufficiently evident, that all these seasons cannot be right; some one or other must be preferable to the rest, provided all other circumstances are similar. The strong idea I had of this fact induced me to form various trials, with all the equality I could think of. Previous to my inserting them I must remark, that
the

the number of ploughings in this, as in other cases of the same sort, must vary. Suppose all the stubbles (as they undoubtedly ought) to be ploughed up in October, and the land to lie in that order for beans, one part of it sown at Christmas, and the rest, by choice, not till April;—now it is evident, that a good farmer would never let his land that had been ploughed in October lie without further tillage till sowing in April: if he does, the time of sowing will not determine it, but the state of the land. The late sown crops will be sown of course in a thicket of weeds, and fail, not on account of time, but the state of the soil: but further, those seasons of sowing which give most time to the farmer to complete his tillage are, in that very circumstance, advantageous: and to make use of such seasons, and at the same time to slight their greatest collateral advantage, is an absurdity in facts. Experiments of this nature should have practicable conduct for their foundation. It might perhaps appear, that to make every season perfectly equal, would be to sow on one earth in all: but so far from this being equal, the inequality would be great; for sowing on one earth in February, when the land is moist and breaks well, must be marvellously different from one earth in April, when it rises in clods as big as a man: this seeming equality, therefore, is delusive. If it be objected to the method upon which I conducted my trials, that it is not season that is the ruler in them, but tillage; I reply, that according to such an objection, the later the crops are sown, the better they must be; which is contrary to all experience, let them be sown when they may. Give what tillage you please, beans sown by the end of April will never equal the end of February: so that granting this objection its full force, it extends no farther than to give such trials a double authority: because a season ceasing to be advantageous, declining as they advance, notwithstanding the advantage of increasing tillage, will prove clearly as day-light that such seasons are much worse than the preceding.

EXPERIMENT N^o 1.

In November 1765 ploughed up a piece of barley-stubble in field L*; and in the following spring, at various times, ploughed and sowed some square perches of beans in drills equally distant, two feet asunder, using three-fifths of a pint of horse-beans to each perch of the same seed.

N^o 1. The 14th of February.

2. The 27th of ditto.

3. March 14th.

A ploughing.

4. - 27th.

5. April 10th.

The intervals were twice hoed; which was performed at various times, in proportion to the growth of the beans: the first hoeing at six inches height, and the second soon after. The produce as follows:

N^o 1. 6 quarts.

2. 6 ditto.

3. 5 ditto.

4. 3 ditto.

5. 1 quart 1 pint.

I do not add the proportion *per* acre, as that is not a matter of consequence: the proportion which one number has to another is the only object; but six quarts are three quarters six bushels *per* acre. It appears very evidently from this trial, that the earlier the beans are sown the better is the crop; although the equality between N^o 1 and 2 looks as if any time in February was sufficiently early. N^o 4 gains a ploughing upon the rest, but yet is much inferior to them; which proves that to sow in April is to be sure of losing the crop. I should remark, that the state of the soil, when every ploughing was given, was the same; that is, in good tillage-order, and not too wet to plough.

EXPERIMENT N^o 2.

In the same field as N^o 1 ploughed the land for the first time in October; and in the spring of 1765 drilled some square perches at various seasons, each in rows at two feet, with three-fifths of a pint of horse-beans, being the proportion of six pecks *per* acre.

N^o 1. February 7th.

2. - - 14th.

3. - - 27th.

4. March 5th.

5. - - 14th.

A ploughing.

6. April 2d.

Another ploughing.

7. - - 15th.
8. - - 23d.

Two hand-hoeings given when the plants were six and ten inches high.
The produce as follows :

- N° 1. 6 quarts.
2. 6 ditto.
3. 6 ditto.
4. 5 ditto.
5. 4 ditto and 1 pint.
6. 4 ditto and 1 ditto.
7. 1 ditto and 1 ditto.
8. 1 ditto and 1 ditto.

The result of this trial is very nearly the same as the preceding. February is the season much more advantageous than any other month ; inasmuch that it seems important to get the seed in so early. The beginning of March something inferior. The middle of the same month much inferior. The beginning of April equals the middle of March ; which is a great contradiction, and for which I know not how to account : but the rest of the month is inferior ; inasmuch that it appears totally unadvisable to sow at that season. The advantages of tillage are of little avail, in opposition to the palpable utility of sowing early : from whence it is the most beneficial method to give the first ploughing in autumn, and the second, for sowing in the first season in February that is dry enough to go on to the land. There is no time for more tillage : but this point is, after all, too important to be decided by a few trials : they must, in future years, be varied and extended.

EXPERIMENT N° 4.

Ploughed up an oat-stubble in field L*, the beginning of October 1765, and water-furrowed it well. In the following spring ploughed and drilled square perches at various times, the rows two feet asunder, and three-fifths of a pint of horse-beans in each.

- N° 1. February 17th : till which time no weather that would admit of tillage.
2. February 28th.
3. March 11th ;—a very fine season !
4. - - 17th, ditto.

5. April

5. April 12th;—a good season, but could not advantageously sow till this time.

A ploughing.

6. April 24th.

Another ploughing.

7. April 30th.

They were hand-hoed as before twice, when six and nine inches high. Produce as follows :

- N° 1. 5 quarts and $\frac{1}{2}$ pint.
 2. 5 quarts.
 3. 5 quarts.
 4. 3 ditto and 1 pint.
 5. 2 ditto and $\frac{1}{2}$ pint.
 6. 1 ditto and $1\frac{1}{2}$ ditto.
 7. 1 ditto.

The equality of N° 3 to N° 2 is a circumstance I know not how to account for : according to the general cast of the trial, it should have been much inferior ; however, the importance of early sowing is extremely clear from the whole trial ; the late seasons not being comparable to the early ones. And this shews the great necessity of understanding fully the nature of every plant the farmer cultivates. In this case he may give three or four ploughings to his land, at ten or a dozen shillings *per* acre, to lose two or three pounds. In a word, if the beans are sown at a proper season, they are a very profitable crop : at an improper season, they are the reverse.

EXPERIMENT N° 5.

Ploughed up a barley-stubble in field M*, in the autumn of 1765.—Note, this soil is not the proper one for beans ; but I tried the time of sowing in it from the circumstance of all comparative experiments being equal in every thing. In the spring ploughed and drilled square perches, each with three-fifths of a pint of tick-beans, at the following seasons :

- N° 1. February 17th.
 2. - - - 28th.
 3. March 11th.
 4. - - - 17th.
 5. April 12th.

A ploughing.

6. - - - 24th.

Another ploughing.

7. - - - 30th.

Hand-

Hand-hoed twice at six and nine inches high. The produce :

- N^o 1. 4 quarts 1 pint and $\frac{1}{2}$.
 2. 4 quarts 1 pint and $\frac{3}{4}$.
 3. 4 quarts.
 4. 4 quarts.
 5. 2 quarts 1 pint.
 6. 1 quart 1 pint.
 7. 1 quart.

An extreme dry season, uniting with a dry gravelly soil, could scarcely allow of good crops of beans; but still the comparison remains the same. The result of it is not precisely the same as in some other trials: for March here appears to be as proper a month for sowing as February; which is rather extraordinary, as the season turned out: for one would apprehend that the earliest sown crops in so dry a year would prove the best, from being deeper rooted before the drought came on. April in this trial is, however, manifestly too late; inasmuch that I should in future consider an April sowing as a condemnation of the crop.

EXPERIMENT. N^o 6.

Ploughed up a wheat-stubble in field L*, in November 1765, and water-furrowed it well. In the following spring ploughed and sowed square perches as before at the following seasons:

- N^o 1. February 17th.
 2. - - - 28th.
 3. March 12th.
 4. - - - 17th.
 5. April 12th.
 A ploughing.
 6. - - - 24th.
 Another ploughing.
 7. - - - 30th.

Hand-hoed them as before twice; once at six inches height, and once when nine inches high. The produce as under:

- N^o 1. 4 quarts.
 2. 4 ditto and 1 pint.
 3. 4 ditto.
 4. 4 ditto and 1 pint.
 5. 2 quarts.
 6. 2 quarts.
 7. 1 ditto.

The result of this trial is, upon the whole, more contradictory than that of any one I have tried. March 17th is superior to February 17th, and March 12th equal: the 24th of April is equal to the 12th, though the 30th is but half the produce of the 24th. All the seasons were equally good for sowing: I know not to what, therefore, to attribute such variations. Such untoward circumstances will be met with in farming experiments; no accuracy will totally prevent them: they must be attributed to those unknown causes which operate so powerfully in every part of natural philosophy. But as contradictory as these circumstances may be, yet the general cast of the experiment strongly confirms the result of the preceding ones. The early sowings are, upon the whole, much superior to the late ones: February and March yield double the produce of April; which is a very great superiority, and proves, that no one should, on any account, venture beans in the ground later than March. The ballance between the February and that month must be determined by future trials.

EXPERIMENT N^o 7.

In October 1765 ploughed up a wheat-stubble in field L*, and water-furrowed it. In the spring ploughed and drilled square perches at various times, turning in by the seed-earth of each the proportion of fifteen loads an acre of rotten farm-yard dung.

- N^o 1. February 17th.
 2. - - - 28th.
 3. March 12th.
 A ploughing.
 4. March 17th.
 5. April 12th.
 Another ploughing.
 6. April 24th.
 A third ploughing.
 7. April 30th.

Hand-

Hand-hoed equally twice; once at six inches high, and once when nine inches. The produce as follows:

- N^o 1. 5 quarts 1 pint.
- 2. 5 quarts 1 pint.
- 3. 4 quarts $1\frac{1}{2}$ pint.
- 4. 4 quarts $\frac{1}{2}$ pint.
- 5. 3 quarts $\frac{1}{2}$ pint.
- 6. 2 quarts 1 pint.
- 7. 2 quarts 1 pint.

The importance of early sowing is sufficiently clear in this experiment. The result is very regular, and shews plainly that the earlier the season, the better the crop will be.

EXPERIMENT N^o 8.

In October 1765 ploughed up an oat-stubble in field L*, and water-furrowed it. Afterwards marked square perches, and sowed them each with three-fifths of a pint, at the following times:

- N^o 1. Second week in December.
- 2. January 25th.—The land, if any thing, too adhesive.
- 3. February 17th.
- 4. February 28th.
- 5. March 12th.
- A ploughing.
- 6. March 17th.
- 7. April 12th.
- A fresh ploughing.
- 8. April 24th.
- 9. April 30th.

Followed my general rule of hand-hoeing them twice, when six and nine inches high, equally to all: all other articles of culture the same to each. Produce:

- N^o 1. 4 quarts.
 2. 4 ditto and 1 pint.
 3. 4 ditto.
 4. 4 ditto and 1 pint.
 5. 2 quarts.
 6. 2 quarts.
 7. 1 ditto.

The result of this trial is, upon the whole, more contradictory than that of any one I have tried. March 17th is superior to February 17th, and March 12th equal: the 24th of April is equal to the 12th, though the 30th is but half the produce of the 24th. All the seasons were equally good for sowing: I know not to what, therefore, to attribute such variations. Such untoward circumstances will be met with in farming experiments; no accuracy will totally prevent them: they must be attributed to those unknown causes which operate so powerfully in every part of natural philosophy. But as contradictory as these circumstances may be, yet the general cast of the experiment strongly confirms the result of the preceding ones. The early sowings are, upon the whole, much superior to the late ones: February and March yield double the produce of April; which is a very great superiority, and proves, that no one should, on any account, venture beans in the ground later than March. The ballance between the February and that month must be determined by future trials.

EXPERIMENT N^o 7.

In October 1765 ploughed up a wheat-stubble in field L*, and water-furrowed it. In the spring ploughed and drilled square perches at various times, turning in by the seed-earth of each the proportion of fifteen loads an acre of rotten farm-yard dung.

- N^o 1. February 17th.
 2. - - - 28th.
 3. March 12th.
 A ploughing.
 4. March 17th.
 5. April 12th.
 Another ploughing.
 6. April 24th.
 A third ploughing.
 7. April 30th.

Hand-

Hand-hoed equally twice; once at six inches high, and once when nine inches. The produce as follows:

- N° 1. 5 quarts 1 pint.
 2. 5 quarts 1 pint.
 3. 4 quarts $1\frac{1}{2}$ pint.
 4. 4 quarts $\frac{1}{2}$ pint.
 5. 3 quarts $\frac{1}{2}$ pint.
 6. 2 quarts 1 pint.
 7. 2 quarts 1 pint.

The importance of early sowing is sufficiently clear in this experiment. The result is very regular, and shews plainly that the earlier the season, the better the crop will be.

EXPERIMENT N° 8.

In October 1765 ploughed up an oat-stubble in field L*, and water-furrowed it. Afterwards marked square perches, and sowed them each with three-fifths of a pint, at the following times:

- N° 1. Second week in December.
 2. January 25th.—The land, if any thing, too adhesive.
 3. February 17th.
 4. February 28th.
 5. March 12th.
 A ploughing.
 6. March 17th.
 7. April 12th.
 A fresh ploughing.
 8. April 24th.
 9. April 30th.

Followed my general rule of hand-hoeing them twice, when six and nine inches high, equally to all: all other articles of culture the same to each. Produce:

- N° 1. 4 quarts.
 2. 4 quarts.
 3. 4 quarts.
 4. 4 quarts.
 5. 3 quarts 1 pint.
 6. 3 quarts $1\frac{1}{2}$ pint.
 7. 2 quarts.
 8. 2 quarts.
 9. 1 quart $\frac{1}{2}$ pint.

From the remarkable equality of product of the four first numbers, it should seem that the three months of December, January, and February, are equal in merit for the sowing of beans; which is more than I should have supposed. March here appears to be inferior to those months, and April greatly so; indeed that whole month, throughout all these trials, is evidently out of the question: those farmers, therefore, who have been so mistaken in their practice as ever to sow in it, should hence determine to change their conduct; for the unprofitableness of it will not admit a doubt.

EXPERIMENT N° 9.

Ploughed up a piece of barley in stubble in field L*, in October 1766. marked square perches on fresh ploughings, and drilled them in equally distant rows, two feet asunder, using three-fifths of a pint of seed, the following times:

- N° 1. November 19th.
 2. November 27th.
 3. December 12th.
 4. December 24th.
 5. January 30th.—A most uncommon snow prevented the sowing before; nor was the land in absolute good order now.
 6. February 7th.—A fine season.
 7. February 14th.—Ditto.
 8. February 23d.—Ditto.
 A ploughing.
 9. March 11th.
 10. March 15th.
 Another ploughing.
 11. March 27th.

12. April

12. April 7th.
A third ploughing.
13. April 13th.
14. April 27th.

Hand-hoed them twice, as usual, when six and nine inches high, unless prevented by weather; in which case the operations were deferred, but given fairly to all. The produce as follows:

- N^o 1. 4 quarts.
2. 4 quarts.
3. 3 quarts $1\frac{1}{2}$ pint.
4. 3 quarts 1 pint.
5. 4 quarts 1 pint.
6. 5 quarts.
7. 5 quarts $\frac{1}{2}$ pint.
8. 5 quarts.
9. 4 quarts 1 pint.
10. 4 quarts $1\frac{1}{2}$ pint.
11. 3 quarts.
12. 4 quarts.
13. 2 quarts.
14. 1 quart 1 pint.

The grand object is very clear and decisive in this experiment. February, upon the whole, exceeds all the other months: January good, and March pretty well; but April, as before, quite out of the question. The sowings in November and December are better than I apprehended, but not good enough to allow a recommendation of them in general; though I think I should not, in favourable weather, let my teams be idle in those months, from the result of this trial. There are some contradictions which I know not how to solve: December being inferior to November, is one; as January is better than December. April 7th exceeding March 27th is contrary to the cast of the season; but, as I have often remarked, no person who makes experimental agriculture his business, must think of a regular uniformity in every part of his trials: contradictions will ever be met with, more than sufficient to puzzle the most acute reasoner.

EXPERIMENT N° 10.

In field M* ploughed up a wheat-stubble, the beginning of October 1766; afterwards ploughed it again at various seasons, and drilled square perches of beans, as follow:

- N° 1. November 19th.
 2. November 27th.
 3. December 12th.
 4. The third week in December.
 5. January 31st.
 6. February 7th.
 7. February 14th.
 8. February 23d.

A fresh ploughing.

9. March 10th.
 10. March 15th.

Another ploughing.

11. March 27th.
 12. April 7th.

A third ploughing.

13. April 13th.
 14. April 27th.

A fourth ploughing.

15. May 6th.

Hand-hoed them twice, as usual, and equally. The produce as follows:

- N° 1. 4 quarts.
 2. $3\frac{1}{2}$ quarts.
 3. 2 quarts.
 4. 4 quarts.
 5. 4 quarts 1 pint.
 6. 4 quarts $1\frac{1}{2}$ pint.
 7. 2 quarts $\frac{1}{2}$ pint.
 8. 5 quarts.
 9. 4 quarts.
 10. 3 quarts 1 pint.
 11. 3 quarts 1 pint.

- 12. 2 quarts $\frac{1}{2}$ pint.
- 13. 2 quarts.
- 14. 1 quart 1 pint.
- 15. $1\frac{1}{2}$ pint.

The result is, upon the whole, very decisive in favour of an early spring sowing. The end of January, February, and the beginning of March, are much superior to any season, which, in two words, at a medium, is February; which is quite consistent with former experience. The gradual decline of the latter numbers, from 11 to 15, proves clearly, that after March the later you sow, proportionably worse will be your crop, notwithstanding every advantage of increasing tillage. But here are, as usual, several great contradictions in the trial; N° 2 and 3 being inferior to N° 1; N° 4, 5, and 6 being equal; N° 7 being so much lower than 5, 6, 8, and 9, &c. these are quite in opposition to the general turn of the experiments, and must be owing to some unknown causes: however, as the general result is clear, and speaks strongly in favour of that practice which has so often been found most advantageous, it is, upon the whole, satisfactory.

EXPERIMENT N° II.

In autumn 1766 ploughed up a barley-stubble in field L*, and water-furrowed it. Ploughed it again at various seasons, and drilled square perches in rows equally distant, two feet, with three-fifths of a pint of tick-beans, being each manured with farm-yard dung ten loads *per* acre.

- N° 1. November 27th.
- 2. December 12th.
- 3. December 22d.
- 4. January 31st.
- 5. February 7th.
- 6. February 14th.
- 7. February 23d.

A ploughing.

- 8. March 10th.
- 9. March 15th.

Another ploughing.

- 10. March 27th.
- 11. April 7th.

A third earth.

12. April.

- 12. April 13th.
- 13. April 27th.
- Another ploughing.
- 14. May 6th.

They were twice hand-hoed as usual. The produce as follows :

- N^o 1. 4 quarts 1 pint.
- 2. 4 quarts 1½ pint.
- 3. 5 quarts.
- 4. 6 quarts.
- 5. 6 quarts.
- 6. 5 quarts 1½ pint.
- 7. 5 quarts 1 pint.
- 8. 5 quarts.
- 9. 3 quarts 1½ pint.
- 10. 4 quarts.
- 11. 3 quarts ½ pint.
- 12. 3 quarts.
- 13. 2 quarts 1 pint.
- 14. 2 quarts ½ pint.

The manure seems to have had a good effect on the crops ; but none that occasioned variations from the time of sowing. February (for so January 31st may be called) is greatly superior to any other season ; so much, that there remains little doubt of that month being the best in the year for the business, if the land is dry enough in it to get on with ploughs. I am somewhat surprized at the winter sown crops, as they stand the continued severity of the weather, not being better than the spring ones : but it must be owing to the land, by receiving a ploughing at the time of sowing, being thereby loosened, and laid more mellow to the seed ; so that at its sprouting, it flourishes better than the seed which has borne the weight of the moulds so long. The common farmers have a notion that beans do not flourish if they are in loose land ; but there never was a more false idea : for good, rich land cannot be made too loose for them. Hence the superiority of the horse-hoeing culture for beans to the common method.

GENERAL

GENERAL OBSERVATIONS.

Before we can pronounce with any certainty which season is the most advantageous for the sowing of beans, the result of the several trials must be brought into one point of view: the averages so gained cannot but be decisive, because they will include every variation that is found in the trials themselves.

SOWINGS in NOVEMBER.

					Q.	P.
Product of Experiment N° 9.	-	-	-	-	4	0
Ditto.	-	-	-	-	4	0
N° 10.	-	-	-	-	4	0
Ditto.	-	-	-	-	3	1
N° 11.	-	-	-	-	4	1
					<hr/>	<hr/>
					20	0

Average, 4 quarts.

SOWINGS in DECEMBER.

						Q.	P.
Product of Experiment N° 8.	-	-	-	-	-	4	0
N° 9.	-	-	-	-	-	3	$1\frac{1}{2}$
Ditto.	-	-	-	-	-	3	1
N° 10.	-	-	-	-	-	2	0
Ditto.	-	-	-	-	-	4	0
N° 11.	-	-	-	-	-	4	$1\frac{1}{2}$
Ditto.	-	-	-	-	-	5	0
						<hr/>	
						27	0

Average, 3 quarts $1\frac{1}{2}$ pint.

SOWINGS in JANUARY.

						Q.	P.
Product of Experiment N° 8.	-	-	-	-	-	4	o
N° 9.	-	-	-	-	-	4	I
VOL. I.	Lll						N° IO.

	Q.	P.
N° 10.	4	1
N° 11.	6	0
	<hr/>	<hr/>
	19	0

Average, 4 quarts $1\frac{1}{2}$ pint.

SOWINGS in FEBRUARY.

	Q.	P.
Product of Experiment N° 1.	6	0
Ditto.	6	0
N° 2.	6	0
Ditto.	6	0
Ditto.	6	0
N° 4.	5	1
Ditto.	5	0
N° 5.	4	$1\frac{1}{2}$
Ditto.	4	$1\frac{3}{4}$
N° 6.	4	0
Ditto.	4	1
N° 7.	5	1
Ditto.	5	1
N° 8.	4	0
Ditto.	4	0
N° 9.	5	0
Ditto.	5	1
Ditto.	5	0
N° 10.	4	$1\frac{1}{2}$
Ditto.	2	$0\frac{1}{2}$
Ditto.	5	0
N° 11.	6	0
Ditto.	5	$1\frac{1}{2}$
Ditto.	5	1
	<hr/>	<hr/>
	98	$0\frac{3}{4}$

Average, 4 quarts $1\frac{3}{4}$ pint.

SOWINGS

SOWINGS in MARCH.

Product of Experiment	N° 1.					Q.	P.
	Ditto.	-	-	-	-	5	0
	N° 2.	-	-	-	-	3	0
	Ditto.	-	-	-	-	5	0
	N° 4.	-	-	-	-	4	1
	Ditto.	-	-	-	-	5	0
	N° 5.	-	-	-	-	3	1
	Ditto.	-	-	-	-	4	0
	N° 6.	-	-	-	-	4	0
	Ditto.	-	-	-	-	4	1
	N° 7.	-	-	-	-	4	1 $\frac{1}{2}$
	Ditto.	-	-	-	-	4	0 $\frac{1}{2}$
	N° 8.	-	-	-	-	3	1
	Ditto.	-	-	-	-	3	1 $\frac{1}{2}$
	N° 9.	-	-	-	-	4	1
	Ditto.	-	-	-	-	4	1 $\frac{1}{2}$
	Ditto.	-	-	-	-	3	0
	N° 10.	-	-	-	-	4	0
	Ditto.	-	-	-	-	3	1
	Ditto.	-	-	-	-	3	1
	N° 11.	-	-	-	-	5	0
	Ditto.	-	-	-	-	3	1 $\frac{1}{2}$
	Ditto.	-	-	-	-	4	0
						94	1 $\frac{1}{2}$

Average, 4 quarts.

SOWINGS in APRIL.

Product of Experiment	N° 1.					Q.	P.
	N° 2.	-	-	-	-	1	1
	Ditto.	-	-	-	-	4	1
	Ditto.	-	-	-	-	1	1
	Ditto.	-	-	-	-	1	1
	N° 4.	-	-	-	-	2	0 $\frac{1}{2}$
	Ditto.	-	-	-	-	1	1 $\frac{1}{2}$
	Ditto.	-	-	-	-	1	0
L 11 2							N° 5.

P U L S E.

Book II.

					Q.	P.
N° 5.	-	-	-	-	2	1
Ditto.	-	-	-	-	1	1
Ditto.	-	-	-	-	1	0
N° 6.	-	-	-	-	2	0
Ditto.	-	-	-	-	2	0
Ditto.	-	-	-	-	1	0
N° 7.	-	-	-	-	3	$0\frac{1}{2}$
Ditto.	-	-	-	-	2	1
Ditto.	-	-	-	-	2	1
N° 8.	-	-	-	-	2	0
Ditto.	-	-	-	-	2	0
Ditto.	-	-	-	-	1	$0\frac{1}{2}$
N° 9.	-	-	-	-	4	0
Ditto.	-	-	-	-	2	0
Ditto.	-	-	-	-	1	1
N° 10.	-	-	-	-	2	$0\frac{1}{2}$
Ditto.	-	-	-	-	2	0
Ditto.	-	-	-	-	1	1
N° 11.	-	-	-	-	3	$0\frac{1}{2}$
Ditto.	-	-	-	-	3	0
Ditto.	-	-	-	-	2	1
					<hr/>	<hr/>
					59	1

Average, 2 quarts.

SOWINGS in MAY.

					Q.	P.
Product in Experiment N° 10.	-	-	-	-	1	$0\frac{1}{2}$
N° 11.	-	-	-	-	2	$0\frac{1}{2}$
					<hr/>	<hr/>
					3	1

Average, 1 quart, $1\frac{1}{2}$ pint.

RECAPITULATION.

					Q.	P.
Average product from the sowings in November,	-	-	-	-	4	0
Ditto in December,	-	-	-	-	3	$1\frac{1}{2}$
Ditto in January,	-	-	-	-	4	$1\frac{1}{2}$
						Ditto

	Q.	P.
Ditto in February, - - - - -	4	1 $\frac{3}{4}$
Ditto in March, - - - - -	4	0
Ditto in April, - - - - -	2	0
Ditto in May, - - - - -	1	1 $\frac{1}{2}$

This table, which is the effence of all the experiments, I must be allowed to think of some importance, in deciding the proper time on these soils for sowing beans: it includes many variations, and is the average of all.

In one respect the result is of particular authority; that of including such a variety of seasons, as to give the rise to the most proper one; as well as the fall from it: When the general average of several trials contains such a gradation, it seldom fails of representing the truth with particular accuracy.

The gradation in this table, tho' not unbroken, is yet pretty regular. February is evidently the best season; both March and January approach near to it: this shews, that in various soils the season may probably continue from the middle of January to the middle of March. The inferiority of December to November is not to be accounted for: all the rest of the table is regular, and each part consistent with the whole.

The superiority of February, the end of January, and the beginning of March, is easily to be accounted for: it appears to be requisite to this crop, that the beans be sown so late in the winter as not to suffer a long pressure of earth upon them. When sown in November or December, they lie nearly as long in the ground before they shoot, as when sown in February; during which extra time the earth upon them subsides, and falls so close, that the young roots have not the power to strike, which they possess when the surrounding earth has not been settling so long by a month or two. And on the other hand, February is early enough to prevent all danger from dry weather coming before the beans are strongly rooted, which is so often the ruin of late sown crops. The beans that are sown in April on two or three spring ploughings, must lie much lighter and in a bed of looser moulds than the earlier seed; but the dryer weather succeeding so soon, and summer coming immediately upon it, draws up the plants in a too hasty growth prematurely; and the consequence is a very poor crop.

Nothing can be clearer than the real necessity of the farmers getting their bean seed in the ground at furthest by the middle of March: the latter end of the month and the beginning of April are seasons that will bring a comparatively poor crop, whatever precautions are taken to prevent

vent it: for any point of good husbandry that is practised with a view to remedy the natural evil of sowing late, would have proportioned effects upon a sowing in good time. This fact is evidently true, and it is surprizing so many farmers should act diametrically opposite to their real interests; yet numbers do it: and it is very difficult to guess their reason; because they have the less necessity from sowing on one earth, which is their common practice, and they certainly have it somewhat more in their power to chuse their season when they sow on a stubble, than if they did as they undoubtedly ought to do, plough up their stubbles in autumn; so that they have no excuse for their bad husbandry. Employing their team in raising a little ready money, is their general winter employment: carrying out hay, faggots, and even turneps; and letting their horses for hire very often, when their seed should be putting in the ground are some among the many blessed consequences of over-stocking themselves with land.

END OF THE FIRST VOLUME.



